

The City of El Paso



Information Technology Strategic Plan

March 31, 2009

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SECTION ONE
Introduction

1.0 INTRODUCTION

1.1 Plan Report

The City of El Paso
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El Paso, Texas 79901

We are pleased to present the attached Information Technology Strategic Plan for the City of El Paso (City) as a result of the Information Technology (IT) Strategic Planning project (Project).

The overall objective of the project was to develop an Information Technology Strategic Plan for the City to guide the ongoing development, management, and coordination of IT resources and services within the City of El Paso. The Plan assessment, observations, and recommendations are intended to guide the City of El Paso's municipal government to a more effective and efficient deployment of its IT resources.

Our procedures included a Citywide IT needs assessment, incorporating existing, relevant needs analyses and studies. The goal is for this Plan to articulate the City's mission and future vision for information technology, and identify goals and specific implementation objectives for the next three to five years. The Plan identifies required and available resources, including staffing, as well as implementation activities and timelines. We developed the Plan in close cooperation with all Departments of the City organization.

Our process made use of the City of El Paso's mission to define a vision for the future of the IT Department's makeup, infrastructure, processes, and other components. We then developed:

- a vision for the IT Department considering the challenges it will face to achieve its goals
- the project initiatives to overcome the challenges to the IT future of the City of El Paso

The following plan is a result of the IT Strategic Planning project, the vision is presented in Section 3 with the resulting strategies presented in Section 7 and strategic phasing in Section 8.

Our field work was performed during December 2008. During the performance of our procedures we communicated preliminary information and recommendations to both senior executive and IT management. As a result of our communications, many of the recommendations may have been, or are in the process of being implemented. In addition, information systems and their related configurations are fluid and can change very quickly. Therefore, our report does not include any information regarding configuration, hardware, or operational changes that have occurred subsequent to March 31, 2009.

This report has been prepared for, and is intended solely for the information and use of the City of El Paso's CIO, the City of El Paso's City Manager and its City Council.

LBL Technology Partners

LBL Technology Partners

April 10, 2009

1.2 Purpose, Objective, Scope and Deliverables

Purpose

The City of El Paso, through its operating departments, has recognized that information technology is vital to the success of the El Paso community. Therefore, the City management has determined that through thoughtful planning and use of technology, there are real opportunities to enhance services to both the City's internal operations and the community.

The City of El Paso was a late adopter of technology, acquiring their first PC in 1996. Since then, there has been an accelerated adoption of IT infrastructure including hardware, software, communications, IT management and other ancillary information assets.

It is evident through discussions and interactions with the City's leadership that there is a commitment to:

- Assessing the current use of IT in the organization
- Developing a comprehensive plan to guide the strategic development
- Management of technology services and resources within the City

This Plan directly addresses this City leadership commitment.

Objective

Therefore, the resulting Project objective was the development of a customer-driven Information Technology Strategic Plan to guide the ongoing development, management, and coordination of IT resources and services within the municipal government. The intent of the Plan is to meet both City organizational needs and the public access needs of El Paso citizens and businesses. It included:

- A Citywide IT needs assessment
- Evaluation of existing, relevant needs analyses and studies

The Plan articulates the City's mission and future vision for information technology, and identifies goals and specific implementation objectives for the next three to five years. The Plan identifies required and available resources, including staffing, as well as implementation activities and timelines. The objective therefore required that we address the question "What is the most effective way to utilize the resources that the City of El Paso has available to strengthen and further align IT capabilities and needs with the City of El Paso's IT mission and vision?"

Scope

The scope included the performance of an evaluation highlighting the current IT Department strengths, weaknesses, opportunities, and any threats to accomplishing the IT Department goals and objectives. The scope also included our identifying, prioritizing, and costing the projects that the City of El Paso should focus on over the next three to five years. In detail the scope components include:

1. Assessment of actual barriers and gaps in the City's information infrastructure and processes that negatively impact provision of customer service.
2. Design of an IT strategic planning process that is successful in achieving understanding, involvement, and support of the City organization, as a whole.

3. Development of an Information Technology Strategic Plan that:
 - Accounts for the needs across the City as a whole, rather than just the IT Department;
 - Describes a vision and direction for the City's IT decision-making and investments;
 - Provides a tool to develop ongoing IT operating plans, budgets, general policies, and training; and
 - Establishes methods and structures for coordination with management and operation of IT throughout the City.
4. Establishment of an organizational information technology strategy and structure that effectively and efficiently serves the needs of:
 - The City organization
 - General public and business access to information
 - All City departments
5. Established an organizational information technology strategy that considers IT industry changes and competitive pressures in a timely manner.

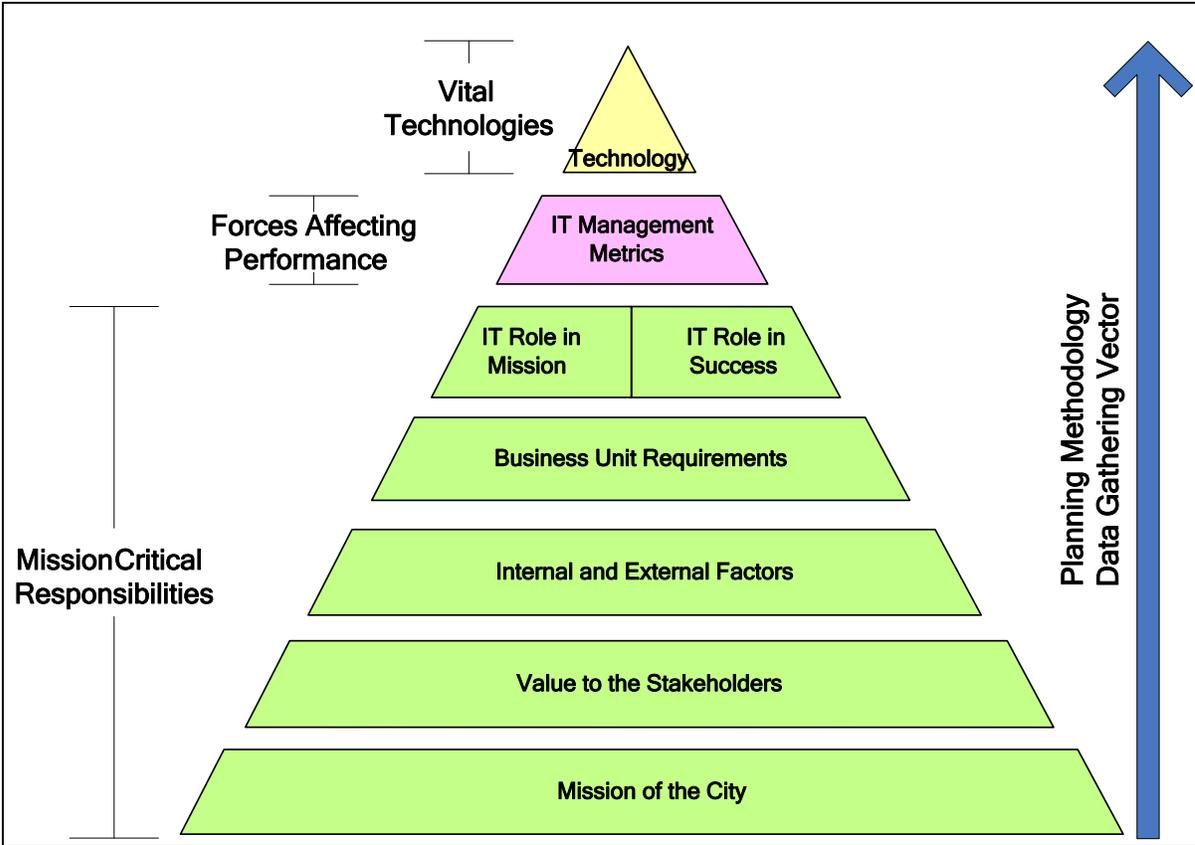
Deliverables

1. An Information Technology Assessment Report containing:
 - Documentation and the descriptions of the technology reviewed and assessed
 - Documentation and the descriptions of the IT environment reviewed and assessed
 - Explanation of the review of the current Mission of IT to ensure it aligns with the business goals of the City as relating to IT, which creates a vision of the City's future technological environment, and establishes long range goals for achieving the IT vision. The explanation discusses any associated gaps discovered in the analysis.
2. The Information Technology Strategic Plan
The resulting Information Technology Strategic Plan will include but not be limited to:
 - Organizational development and staffing recommendations
 - IT funding and organizational recommendations
 - A recommended implementation plan and schedule
 - An impact analysis

1.3 Methodology

LBL Technology Partners made use of a methodology with a foundation based on the City of El Paso’s mission. The City of El Paso’s mission was used to define a vision for the future of the IT Department’s makeup, infrastructure, processes, and other components.

The methodology used was not driven by technology and operational desires and needs alone. The intent of the methodology was to assure that the City’s mission; the value to the stakeholder’s; external and internal factors, and the IT department requirements were all considered. The technology planning pyramid below graphically presents the planning methodology.



In developing the Information Technology Assessment Report, and the Information Technology Strategic Plan for the City of El Paso we worked with the stakeholders, organizational leaders and decision makers to develop the vision, goals, objectives and strategies for inclusion in the strategic plan.

Once the IT Department vision was developed, challenges to the vision were considered. The challenges to the vision then resulted in the project initiatives necessary to overcome the challenges for the future the City of El Paso’s IT.

Each project initiative was divided into goals, strategies and action items which form the basis for the plan.

Our Project Methodology is presented in the diagram on the following page.



The strategic planning methodology made use of the understanding that the challenges to any IT department vision can best be discovered through a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis of the Organization and the IT department. We performed a SWOT analysis to identify the challenges. The discovered strengths, weaknesses, opportunities, and threats were used to define the internal and external attributes that were helpful and harmful to the success of the implementation of the IT strategic plan.

The detailed processes used to develop the plan included the following phases and components:

- Assessment Phase
 - Technology Background
 - Background Information Gathering
 - Short and Long Term City Goals and Plans
 - Security Policies
 - Organization Controls
 - Key area feedback surveys
 - Staffing Self Assessment
- Strategic Formulation Phase
 - IT Function Assessment
- Program Definition Phase
 - Analysis and Evaluation
 - Plan Development
 - Reporting

1.4 IT Organization and Environment

To develop the IT strategic plan, business strategies are defined first, and then IT and other technologies are aligned to support them. However, organizational culture can not be overlooked or underestimated as a factor in the success or failure of the final IT plan. The culture within an organization is a vast issue. In this section we look at the City of El Paso's IT organizational structure and both the logical and physical IT environments.

1.4.1 IT Organization Model

IT organizations are typically classified as centralized, decentralized or hybrid. Centralization of information technology resources refers to organizing all technology related services into a single department, which then provides services to the entire organization. Decentralization on the other hand gives individual departments the responsibility for control over their local IT resources with little or no consideration of other units. Hybrid IT organizations typically exist in larger enterprises where centralized IT management exists over decentralized sub-agencies/organizations.

It is important to understand that historically, the City of El Paso IT organization functioned in a decentralized or compartmentalized manner. This led to technology "silos" resulting in the fact that the sharing of information and leveraging of IT resources Citywide was difficult.

Currently, the City of El Paso uses a hybrid approach to the management of IT operations. The City manages and operates technologies centrally from its City Hall location with some IT support staff existing in the individual departments (decentralized). Decentralized IT services support many of the specialized applications and hardware focusing on the individual departments needs. In addition, desktop support exists in those individual departments along with departments where locations are determined to need onsite support.

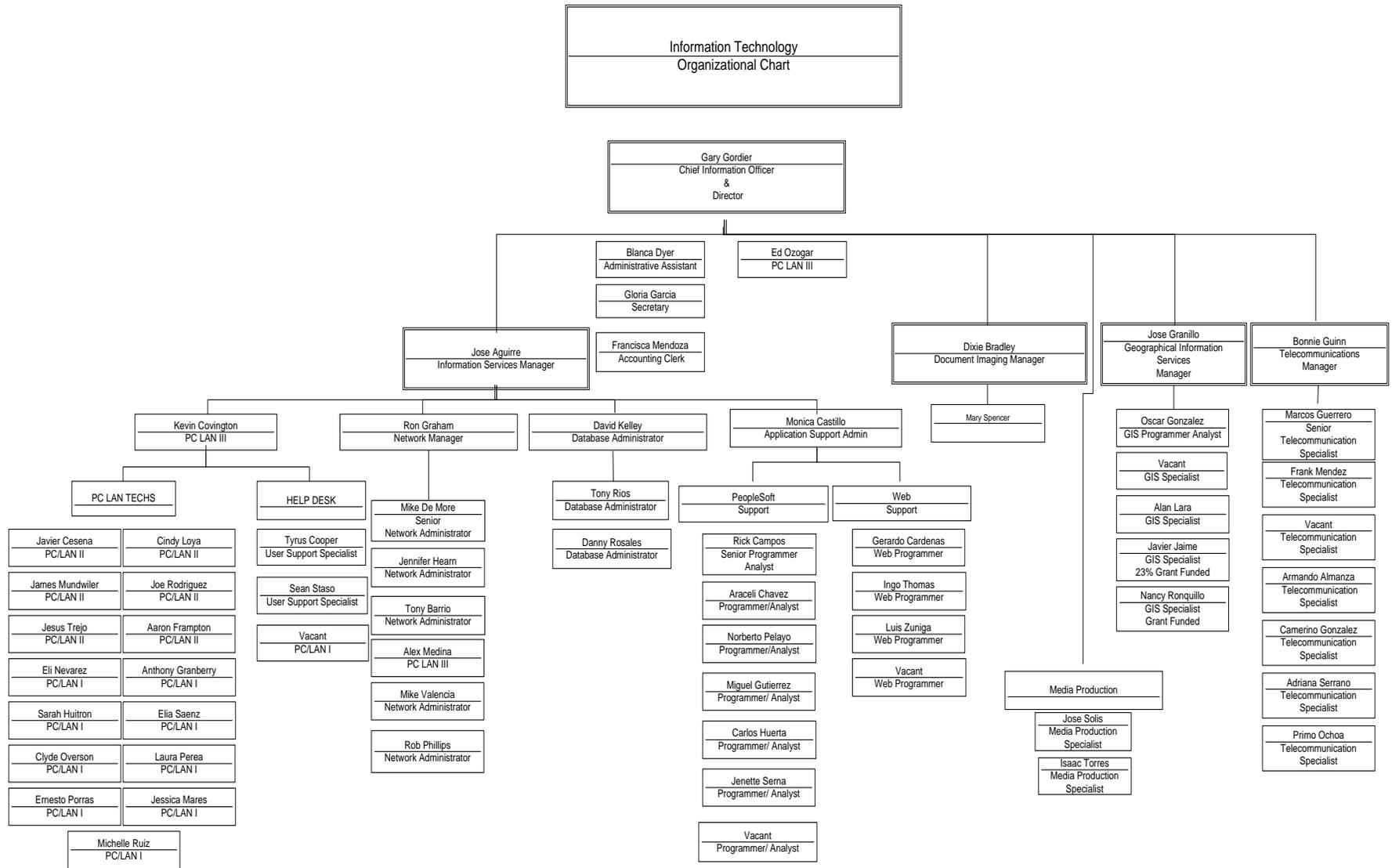
The issues presented by this model include:

- Supporting the departments at their individual locations.
- Eliminating or minimizing the IT single points of failure. (Note that the single points of failure mainly exist in departmental application deployment on single servers without any redundancy. In addition, some non-redundant communication pathways exist within the City's IT infrastructure.)
- Using standard, uniform and searchable documentation to leverage the existing knowledge base across the organization.

The existing IT department consists of Sixty-three (63) staff positions shown in the organizational chart on page 7. The IT staff is divided into three (3) Divisions:

- Information Services Division
 - Technical Support
 - Network Support
 - Database Administration
 - Application Support
- Geographical Information Services(GIS) Division
- Telecom Division

The IT Department Organization Chart is presented below.



1.4.2 Physical Environment

The City of El Paso employs a workforce of approximately five thousand-three hundred and sixty-six (5,366), with a 25-department operation that works daily to ensure excellence in customer service while meeting the needs of the citizens and visitors of El Paso. The IT network environment can be summarized as follows:

- The network core for data in El Paso primarily utilizes Cisco 3550 switches¹ with connectivity between the one hundred forty-five (145) locations using Cisco routers² over a variety of connections ranging from dial-up to fiber.
- Connectivity to the internet uses Cisco 6513 switch via a full DS3³ in El Paso. The networks are protected from unwanted inbound Internet traffic via redundant Cisco PIX 525 Firewalls.

The server infrastructure is comprised of the following:

- The City of El Paso's ERP⁴ system Oracle/PS (PeopleSoft) Version V8.4 Financials and V8.9 Human Resources resides on thirty-five (35) Dell POWEREDGE servers. The ERP servers are located in the City of El Paso datacenter as well as Police Department Headquarters.
- The City of El Paso supports one hundred forty-five (145) sites utilizing dial-up, T-1⁵, and Fiber connections depending on the location.
- The City of El Paso IT users authenticate to one (1) of two (2) separate domains⁶. The Public safety users are on a separate domain from all other users of the City of El Paso.
- The City of El Paso website (www.elpasotexas.gov) is hosted by the City of El Paso on their equipment in their datacenter.

The backup capacity for the City of El Paso is comprised of the following:

- City hall maintains two (2) tape libraries each with four (4) drives.
- Municipal Service Center maintains one (1) with two (2) drives.
- Police Department Headquarters maintains one (1) tape library with two (2) drives.

The voice communications environment is summarized as follows:

- The current voice system is connected to the Avaya switch in the basement via the wiring closets on the floors. This is by design because the wiring closets don't have generator backup. .
- Not all City employees can be assigned voicemail boxes. This is due to existing voicemail system limitations. Only 1,000 voicemail boxes are allowed. The City estimates there is a shortage of 2,111 voicemail boxes within the City employee base.

¹ A switch is a network device that cross connects the user work stations and/or network segments together.

² A router is a network device that forwards network traffic from one network to another.

³ A DS or Digital Signal – is a classification of digital circuit. The DS technically refers to the rate and format of the signal, a DS3 maintains 672 voice channels at a speed of 44.736 Mbps. DS3 it is synonymous with the term T3 since in practice, "DS" and "T" are used synonymously.

⁴ ERP or Enterprise Resource Planning is an integrated information system intended to serve all departments within an enterprise. ERP systems can and most often do include order entry, accounts receivable and payable, general ledger, purchasing, payroll and human resources.

⁵ A T1 is a 1.544 Mbps point-to-point dedicated, digital circuit provided by the telephone companies.

⁶ A Domain is a network or group of client computers and servers under the control of one security database. This can also be defined as; all computing resources in a Domain are under the control of a single computer security system.

- Currently there is a 800 MHz radio system that is analog in use. The City of El Paso is upgrading to Motorola P25 digital encrypted. The city is mandated to be at P25 by 2015. El Paso is a regional master site and will have HF and 800 MHz.
- The City of El Paso has already purchased approximately 200 VoIP⁷ phones that have not been deployed due to lack of appropriate infrastructure.

As an additional point, during our engagement we noted that the IT department has completed, or is in the process of completing several IT physical and environment initiatives. These IT physical and environment initiatives enhance the computing capabilities for the city. These enhancements include:

- Upgraded the PIX 525 firewalls to Cisco ASA 5520 firewalls⁸.
- Upgraded the Core Switches, two (2) 6513 and one (1) 6509, with new supervisor 720 modules and the latest IOS⁹.
- Replaced the fiber GBIC¹⁰ blades in the 6500s with the new enhanced and supported models.
- Implemented and began using the fiber to the largest remote site in the city the Municipal Service Center (MSC) in March.
- Connected the lower valley library via fiber.
- A server virtualization project is underway where twenty (20) of the servers recently virtualized¹¹

Note that we concur with the City's virtualization project, this practice provides multiple benefits to the City including but not limited to:

- Investing and maintaining fewer physical servers, thereby reducing hardware acquisition and maintenance costs
- Increasing space utilization, thereby allowing for efficiency in the City's datacenter
- Providing the ability to place each application within its own "virtual server", thereby preventing one application from impacting another application
- Developing a standard virtual server build for easy duplication, thus accelerating deployments
- Providing the ability to deploy multiple operating system technologies on a single hardware platform

⁷ VoIP or "Voice Over IP" is digital telephone service that uses the same methods of communication as the public Internet for call transportation.

⁸ The PIX Firewall was an excellent stable firewall. However, Cisco released an "End of Sale" statement of January 28, 2008, on the PIX line of products. It was of great concern to City's IT Department because there will be no more software maintenance after July 2009 on the PIX line of products. The Cisco replacement line, the ASA (Adaptive Security Appliance) line of firewalls offers a much more robust security solution as compared to the PIX line.

⁹ IOS or Internetwork Operating System is the operating system (primary control program) used on the core Cisco switches and routers. It supports the common functions of all products under Cisco's CiscoFusion architecture.

¹⁰ GBIC or GigaBit Interface Converter is the hardware module used to attach network devices to the fiber-based transmission backbone for faster transmission rates and/or over long distance.

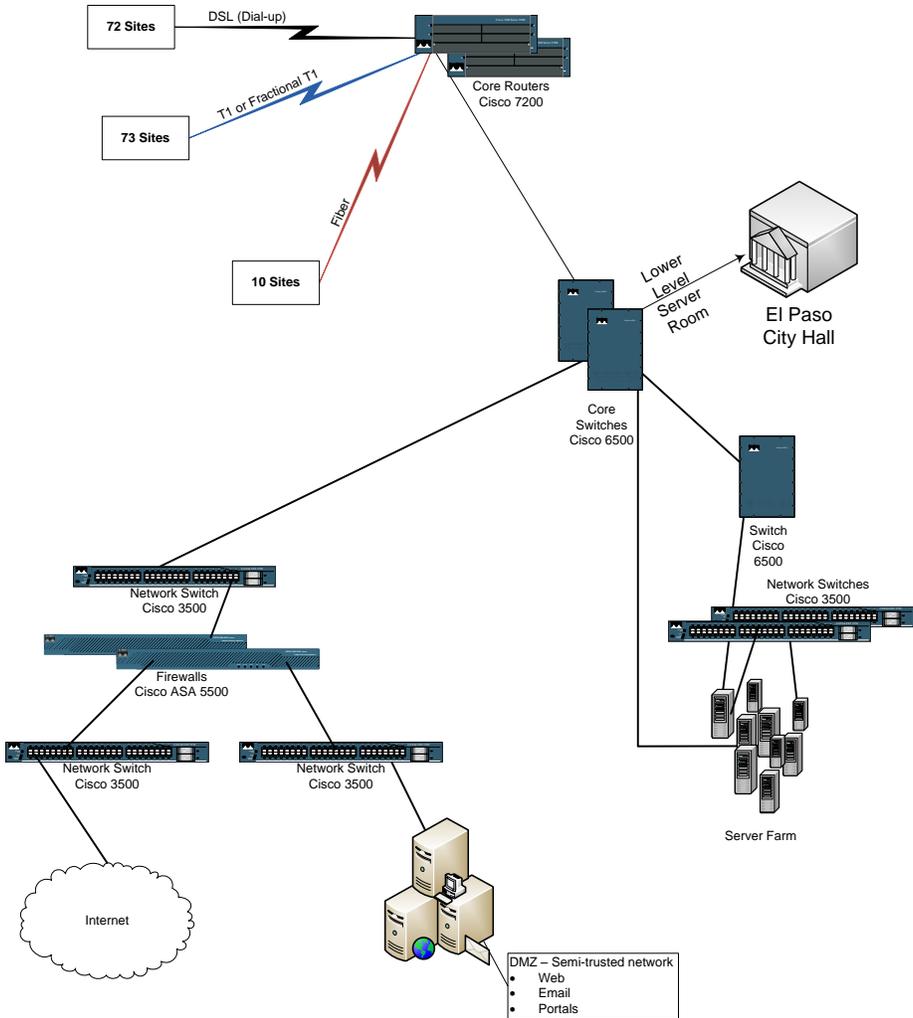
¹¹ Server virtualization is the practice of running server based applications in separate, isolated partitions within a single physical computer. The "virtual machine" can and in some cases does run different operating systems simultaneously on the same physical computer.

Other currently planned initiatives include the addition of:

- Network Appliance SAN/NAS¹² for low cost tier 2 and tier 3 storage
- EMC CX-4xx SAN storage for tier 1 storage requirements
- Three (3) R900 servers for additional server virtualization

The City of El Paso core applications reside on Dell POWEREDGE servers. The users authenticate to a Windows domain. The City of El Paso uses Oracle/PS V8.4 Financials and V8.9 Human Resources as their ERP system. The ERP system is deployed in a Windows environment with ancillary file and print services operating on Windows Servers.

A very high level general diagram of the core network with the exiting equipment along with the planning upgrades indicated above is presented below.



¹² Both the SAN (Storage Area Network) and NAS (Network Attached Storage) are data storage technologies. SANs connect multiple servers to a centralized pool of disk storage. NAS devices contain slimmed-down operating systems and a file system that processes only I/O requests by supporting file sharing.

The City of El Paso is currently on an informal seven (7) year refresh cycle for Information Technology resources; however, the City has now standardized on a Cisco network infrastructure with most of the infrastructure being upgraded and migrated to Cisco within the last five (5) to six (6) years. Additionally, the core infrastructure has been placed on maintenance and a replacement cycle. The core infrastructure Cisco equipment is covered by SmartNet.

1.4.3 Logical Environment

ERP System

The City of El Paso uses Oracle's PeopleSoft modules V8.4 Financials and V8.9 Human Resources ERP integrated applications suite of financial applications. ERP modules are typically able to interface other enterprise applications with varying degrees of effort. PeopleSoft has several application modules to support diverse business operations that the City of El Paso may be able use to integrate with systems in the future.

Oracle's PeopleSoft offers a choice of databases, operating systems, and hardware. The City of El Paso operates PeopleSoft on Oracle under the windows operating system.

Special Purpose Applications

In addition to the ERP system, due to the diverse needs of the City's operating departments, there are numerous special purpose applications. The applications highlighted in the SWOT analysis included the following:

- ArcGIS - GIS¹³ System
- AbleTerm (JIMS) – PD & Courts
- SirsiDynex library system – Library
- ZIMS – Zoological Information Management System

A complete list of applications not highlighted in the SWOT analysis and user developed applications are included in Exhibit A.

1.4.4 Funding

The budget for the Information Technology Department is derived from the City's General Fund. The Information Technology Department budgets annually for:

- Personnel services both regular/temporary
- Contractual services (note that the vast majority of it staff positions are currently under contract)
- Materials and supplies
- Operating expenditures
- Non-operating/intergovernmental expenses
- Internal transfers
- Capital outlay (for equipment to be used within the Information Technology Department)

¹³ GIS is an acronym for Geographic Information System. GIS applications deal with spatial information. GIS applications are also referred to as "mapping software," linking attributes and characteristics of an area to its geographic location.

Funding for IT related initiatives within the City's individual operating departments is derived from individual departmental capital budgets, and/or departmentally obtained grants. Therefore, this funding does not pass to the Information Technology Department. However, funding for individual department information technology asset refreshes (i.e. replacements of: old computers, communications equipment, data storage devices ...) and the maintenance for both hardware and software, is the responsibility of the Information Technology Department.

The issues presented by this model include:

- Lack of control by the Information Technology Department over the planning and anticipation for the refresh cycle for IT asset obsolescence
- Lack of coordination resulting in inefficient use of City information technology assets between the individual departments (silo affect)
- Training concerns where the Information Technology Department has minimal ability to support the information technology assets
- Lack of communication between the operating departments and the Information Technology Department. This creates the potential for funding issues and constraints with respect to maintenance of systems for which the Information Technology Department is unaware.

SECTION TWO
Executive Summary

2.0 EXECUTIVE SUMMARY

2.1 Objective

The Project objective was to develop a customer-driven Information Technology Strategic Plan to guide the ongoing development, management, and coordination of IT resources and services within the municipal government. The intent of the Plan is to meet both City organizational needs and the public access needs of El Paso citizens and businesses. It included:

- A Citywide IT needs assessment
- Evaluation of existing, relevant needs analyses and studies

The Plan articulates the City's mission and future vision for information technology, and identifies goals and specific implementation objectives for the next three to five years. The Plan identifies required and available resources, including staffing, as well as implementation activities and timelines. The objective therefore required that we address the question "What is the most effective way to utilize the resources that the City of El Paso has available to strengthen and further align IT capabilities and needs with the City of El Paso's IT mission and vision?"

2.2 Analysis

City management recognizes that information technology is vital to the success of the El Paso community. City management believes there are real opportunities to enhance services to both internal operations and the community.

The City was a late adopter of technology, acquiring their first PC in 1996, with an accelerated IT adoption since. This caused a lack of up front coordination and planning, budgeting for replacement technology, and utilization of more modern technology.

The City has a need to increase the communications between its operating departments and information technology. Lack of this crucial communication causes the following to occur:

- Information Silos
- Duplication of software functionality
- Inability to support applications
- Training Issues
- Allocation of budget for refresh and maintenance issues

There are several actions the City of El Paso can take to achieve increased communication within and between the operating departments and the IT Department. While the City of El Paso does not typically formalization internal agreements between operating departments, local governments that operate similarly to the City of El Paso do opt to include formalized agreements between the IT Department and their operating departments and divisions. The creation of Service Level Agreements (SLA)¹⁴ between IT and the operating departments can define and communicate the relationship and responsibilities associated with the individual department and IT. The implementation of a change control board (CCB)¹⁵, IT Liaison (steering) Committee, and business analyst positions (see Exhibit D

¹⁴ An SLA is a negotiated agreement between two parties where one is the customer and the other is the service provider. It is a common understanding about services, priorities, and responsibilities.

¹⁵ A CCB is a committee that makes decisions regarding whether or not proposed changes to a software project/application should be implemented. The change control board is constituted of project stakeholders or their representatives and IT Department leadership.

for sample business analyst job descriptions) positioned in each of the portfolios¹⁶ would assure that operating departments and the IT Department are kept abreast of changing IT demands and needs, available new technology, changes to existing technology, as well as the impact of changes to the strategic direction of the Information Technology department.

If properly formalized and implemented these components can be used to:

- Break-down the existing technology silos within the City
- Provide the ability to measure the IT Department's success in supporting the functioning user departments
- Assure the proper support and processes for successful application implementations
- Guarantee the proper support and processes for successful computing infrastructure implementations
- Assist in the functioning user department satisfaction with the support received from the IT Department

There are many software packages, user applications, and hardware devices deployed throughout the all operating departments of the City. There is no existing central inventory of applications and their functions, user developed applications, or hardware. Attempts have been made to capture this information but it is not complete in any area. The lack of standard, uniform and searchable documentation can cause replication of software functionality, information silos, duplicate implementation of the same software, and increased training needs for operating departments as well as information technology for support, and increased refresh and maintenance costs. A large scale documentation project should be undertaken to capture all applications, user developed applications, and hardware across all the City functions. The information is necessary to define effective and efficient solutions for their technology needs.

During the interviews of the operating departments many reported they are experiencing slow to little or no voice and data capabilities to their locations. If the capability in the operating departments is not resolved, future enhancements to functionality (VoIP, Increased demand for Web applications, new technologies) will fail. Currently the City has several issues due to the capabilities of the communications; including multiple instances of GIS, slowness of e-mail, and ARC Server versus ARC Viewer issues. There is currently a fiber installation project in progress. The project should be reviewed and expanded if possible to ensure all the issues of the operating departments have been addressed.

Information technology is considered vital to the success of the El Paso community. It is the belief of City management that there are real opportunities to enhance services to both internal operations and the community. Currently there is no way to measure or monitor this success; there is no way for an operating department, management, or the community to have vision into the success and/or progress of the IT Department. This can be accomplished by creating service level agreements between the operating departments and information technology to establish the level of service to be achieved. In addition there should be metrics established to measure, monitor, and inform all parties of the progress being made.

¹⁶ The term portfolio corresponds to the City of El Paso's definition for the groupings of its functional departments. This definition includes the portfolios: Finance & Public Safety, Quality of Life Services, Development & Infrastructure Services, and Mobility Services.

2.3 IT Vision

In preparing this Strategic IT Plan, IT management agreed to a vision for the City's IT Department:

All City information and information-based services are acquired, maintained and kept current in the most cost-effective manner possible. Information and information-based services will be acquired in order to deliver necessary services to the City of El Paso's citizens cheaper, better and faster. All systems acquired and/or developed will be maintained, secured and appropriately backed up to ensure data availability, data integrity and data confidentiality.

To accomplish and support this vision, a key objective must be to realign the support capabilities within the IT Department to allow for:

- Enhanced standard, uniform and searchable documentation to provide the ability to support both applications and infrastructure; sustaining information availability, thereby assuring both internal and external users access to information when and wherever needed.
- Application ownership by the user departments.
- A Business Analyst function for each portfolio reporting to the Information Systems Manager to assist with business process re-engineering if and where needed, application definition, and business process documentation.
- Implementation of a CCB and IT Liaison (Steering) Committee to assure City-wide goals and objectives are considered during the implementation of new applications, enhancement of existing applications, or changes to hardware are implemented.
- Increased voice and data communications with the implementation of the fiber project and VoIP.
- Allocation of the budget for refreshes and maintenance fees.

2.4 Components of the IT Strategic Plan

The City of El Paso's resulting IT Strategic Plan includes the following components:

- Contemporary technologies throughout the City of El Paso.
These contemporary technologies should provide flexible, robust and supportive systems with equally flexible, robust and supportive technical environments.
- Systems that provide for integration through middleware, when possible and practical.
These systems should allow business area functions to be consolidated through data communications when and wherever possible. This strategy can result in minimizing the currently disparate, stand-alone and unshared information. The end result will be the reduction in duplicative efforts and lack of information sharing throughout the City of El Paso. In addition, this will also minimize the potential for data entry errors and inaccuracies.
- Leveraging of existing applications.
Prior to acquisition of additional software for any department, a needs assessment and consideration of the capabilities of all existing systems/applications should be completed and analyzed. The end result will be a reduction of like systems to support.

The tactical plans for the implementation of this IT Strategic Plan are presented in Section Eight (8) – Strategic Phasing.

2.5 Implementation Plan

The City of El Paso has made limited investment in IT infrastructure for years. In some cases, for example, desktops have not been refreshed since the 90's. In the past funding for infrastructure upgrades have been tied to specific projects instead of being viewed as its own valid initiative. Subsequently, if funding for a particular project is cut, the funding for infrastructure suffers as well even though Citywide infrastructure investments are critical to meet all current and future IT needs.

Therefore, a virtual 100% IT infrastructure refresh was required. In addition, the City required a 100% desktop refresh scheduled to be completed in 2009; however, funding limitations have impacted this effort. The IT investment deficiency also impacts the primary applications in use by the City of El Paso including the:

- Oracle/PS Version V8.4 Financials and V8.9 Human Resources Association management system
- Other departmental specific applications (See Exhibit A for a complete list)
- Interactive Web portal capability

Significant advancements have taken place in available enterprise systems during the last decade. The City of El Paso's lack of IT investment has limited its ability to take advantage of these IT advancements thereby limiting the opportunity to capitalize on the related efficiencies and increased service capabilities. The advancements include but are not limited to:

- Graphical user interfaces allowing the applications to be more intuitive thereby reducing the learning curve and making them more efficient for staff and management to use.
- Common relational database management systems (e.g. Microsoft SQL Server) providing the capability for the movement of data between applications (where appropriate) making the City of El Paso more operationally efficient.
- Web enabled applications providing the capability of a closer link between the City of El Paso, its citizens and stakeholders.

Therefore, the overall vision is to modernize the City of El Paso's IT environment to capitalize on the opportunities the modern applications offer. The challenges to this vision include:

- Missing Business Analysts

To provide for a smooth and effective migration to the modern applications, Business Analysts must act as a liaison among the stakeholders in order to elicit, analyze, communicate, and validate requirements for the changes necessary to business processes, policies and information systems. The Business Analysts will also act as a tool to break-down the exiting technology silos within the City's computing infrastructure.

- Application ownership.

The user departments are ultimately responsible for assisting in the selection and the successful implementation of the applications for their areas of responsibility. The user departments are the only ones uniquely qualified to understand their business needs. This is in contrast to the application custodian¹⁷ (the Information Technology Department) who is responsible for maintaining the appropriate environment for the application.

¹⁷The application custodian is responsible for maintaining the appropriate environment for the application. This includes: assuring the application and the database used by the application is at the appropriate patch and revision level and installed on

- Lack of communications between information technology and operating departments.
The creation and implementation of a CCB and an IT Liaison (Steering) Committee with representatives from all portfolios will enhance the vision into information technology needed by the operating departments to assist them with decisions regarding their future technology needs.
- Poor Data/Voice communication within the City
The fiber project currently in progress should include an additional phase of analysis to ensure all operational departments current and future needs will be met with this project. The fiber project should be expanded to include these needs.
- Missing standard, uniform and searchable documentation
Standard, uniform and searchable documentation is critical in any operation and has a direct impact on the ability to maintain, support and migrate to new applications. In addition; standard, uniform and searchable documentation is necessary to maintain an appropriate level of application and system security.
- Funding constraints
The refresh cycle (plan) along with the project spending plan must be updated prior the end of each fiscal year budget cycle (typically the March/April time frame) to accommodate any changes tied to the City's budget process. With this approach, the City will continually be looking forward three years for planning and budgeting purposes.

The steps necessary to attain the vision set by the IT Strategic Plan are structured into three phases over a five (5) year period are as follows:

Phase One: Establish a manageable IT foundation for subsequent growth, enhancement, service delivery, and implementation processes.

- Augment the staff in each of the City's individual portfolios with the addition of a Senior Business Analyst function reporting back to the Information Technology Manager. Evaluate and add Business Analysts in each of the portfolios as needed. Once in place, the Business Analysts will provide support to the user departments within the portfolio by assisting in both re-engineering, automating processes, and determining best fit applications to support each user departments needs.
- } Add a Senior Business Analyst to each of the portfolios in year one (1) then evaluate and continue to add Junior Business Analysts to each of the portfolios as needed through final migration in year five (5).

the appropriate hardware, appropriate capacity to support the application service level requirements is maintained, responsible for the security of the application and database to maintain confidentiality, availability, and integrity of the data in the application, ensuring that data is backed-up according to the direction of the Application Owner.

- Create a Change Control Board (CCB) to make decisions regarding whether or not proposed changes to a technology project should be implemented. The change control board is constituted of project stakeholders or their representatives, and IT Department leadership.
- Augment the IT Department Staff with the staff necessary to provide the project management and support required by the user departments along with the necessary support required by the modernization effort.
- Create an IT Liaison (Steering) Committee to provide feedback to Information Technology as to the effectiveness of current IT technologies, procedures, and service levels. Additionally, the Committee may advise Information Technology regarding specific improvements that should be considered to increase the effectiveness or impact of Information Technology in operational departments, evaluate the Information Technology Strategic Plan, and ensure projects or acquisitions are prioritized appropriately.
- Perform a large scale IT systems documentation project to assure all systems (both infrastructure and software) are appropriately and consistently documented in anticipation of future migration plans. This assures the availability of useful documentation during the migration effort.
 The IT systems documentation project includes the development of documentation standards for all software and hardware. Once documentation standards are developed and implemented, the documentation should be placed in a form where it is searchable by all authorized staff.
- Secure funding for future projects including infrastructure enhancements including the ever increasing demand for storage capacity, and the refresh of all infrastructure, peripheral, and desktop equipment.

Add a CCB in year one (1).

Phase-in needed staff as the network and other computing infrastructure modernizations take place.

Add a IT Liaison (Steering) Committee in year one (1).

Begin the process in year one (1) completing it by the end of year two (2).

Begin the process in year one (1) completing it by the end of year three (3).

- Plan, implement, and secure funding for the update of connectivity (Fiber) and power to all locations. This establishes the groundwork for the implementation of a VOIP phone system and leverages the investment already made.
- Develop Service Level Agreements with user departments including measurement metrics. This provides for measurement of the migration success and measurement of the support once migration is complete.
- Construct a method of providing transparency between the acquisition of IT Assets at the Departmental level and the budgeting for maintenance and refresh at the IT Department level.

Begin the process in year one (1) completing it by the end of year three (3).

Develop and implement in year two (2).

Develop and implement in year one (1) with completion in year two (2).

Phase Two: Deploy more efficient technologies and/or make better use of existing IT assets to increase productivity. In addition, this phase addresses the need for a critical new infrastructure prioritized in terms of the value to be delivered to end-users.

- Commence a process of eliminating and/or mitigating single points of failure where present within the IT infrastructure. This includes the deployment of two or more devices, communication lines, and/or staff members for any function supported by the IT Department thereby assuring continuous operation.
- Analyze and document business processes in functional departments. The analysis and document would be of the existing day-to-day operations of the City of El Paso's functional departments. The purpose of the exercise is the development of general system solutions to problems that may or may not require automation.
- Develop plans for re-engineering business processes within the functional departments where needed. The plans would be the result of the analysis and review of the existing day-to-day operations with the purpose of developing general system solutions to problems that may or may not require automation. Once complete the implementation of these recommended process improvements would be undertaken by the City of El Paso's functional departments.

Begin the process in year two (2) completing the mitigation of the single points of failure by the end of year three (3).

Begin the analysis in year two (2) completing the development of recommendations for system and business solutions to problems by the end of year three (3).

Initiate the planning for recommended changes and process improvements in year two (2) with implementation to begin in year three (3) and complete in years four (4) and five (5).

- Re-implement/implement underutilized applications to improve efficiencies within the functional departments and across the enterprise. This will enable the City of El Paso to make use of existing IT asset investment in applications which are currently utilized. Re-implementation involves the use of appropriate resources, training, and acceptance of departmental ownership.



Begin the process in year two (2) completing the re-implementations / implementations by the end of year three (3).

Phase Three: Deploy major and complex technologies that will move the City of El Paso forward (full modernization). This phase will initiate as work is underway for Phases One and Two, but must progress in an incremental and phased manner to achieve success.

- Acquire and migrate to a datacenter with appropriate environmental controls. These include but are not limited to: an equipment only room with appropriate gas fire suppression, redundant power, generator power backup, cooling and humidity control, and elimination of water and sewer overhead pipes.
- Merge the Telecom and Information Technology divisions to provide a complete support avenue for the transition to a Citywide VoIP solution.
- The replacement of the existing telephone system should provide both Voice over IP (VoIP) capability eliminating long distance fees, and additional voicemail capabilities.



Plan for the replacement of the computer room in year one (1), replacement will begin in year two (2) and completed in year three (3).



Plan for the merge of divisions beginning in year one (1) with completion prior to the voice system replacement planning in year two (2).



Plan for the replacement of the voice system in year two (2) with replacement occurring in year three (3).

- The following are essential to ongoing success to the City's IT Department:
 - Successful installation of the Business Analyst functions into each of the portfolios. Application ownership by all of the user departments.
 - Successful implementation of a CCB and IT Liaison (Steering) Committees.
 - Implementation of the update of connectivity (Fiber) and power to all locations.
 - Maximization of the existing applications along with the other City of El Paso IT assets
 - Necessary business process re-engineering

Then the core infrastructure support will be available for the beginning of the enhancement and implementation of functionality such as wireless and increased web functionality for all of the portfolios.



The enhancement and implementation of functionality such as wireless and increased web functionality for all of the portfolios. Should begin in year three (3) with completion in years four (4) and the early part of year five (5).

2.6 Funding

Section 8.2 Budgetary Requirements details the funding needed by the IT Department to implement the recommendations.

Note that there are two items where the costs can not currently be estimated. These two items include:

1. The move of the City's Datacenter (the current computer room in the lower level of City Hall) to an environmentally appropriate location. The costs will depend on the location chosen, the necessary build-out of the currently unknown space, power and HVAC need for the facility chosen, costs for high bandwidth connectivity to other City facilities, and if the facility will be a lease or a purchase.
2. The cost of high bandwidth fiber connectivity to the City locations now under T1, fractional T1 and Dial-up where necessary. The cost will depend on if already exiting fiber can be used, a 3rd party carrier will supply connectivity, or the City will pull their own fiber (construction costs will apply).

Other then the two items noted above the summary costs for additional staff, equipment modernization and refresh cycles are presented in summary below.

Year	Estimated Additional Wages	Estimated Equipment Refresh Needs	Total Estimated Costs
1	\$195,000	\$3,885,000	\$4,080,000
2	\$560,000	\$3,885,000	\$4,445,000
3	\$265,000	\$4,265,000	\$4,530,000
4	\$90,000	\$3,753,750	\$3,843,750
5 and After	\$0	\$4,750,000	\$4,750,000

SECTION THREE
Vision and Mission

3.0 VISION AND MISSION

3.1 Vision

The current City Manager supports the City in embracing new technologies however, the City of El Paso's IT infrastructure, as well as its IT service delivery capability has lagged behind many organizations. This has been due to tight budgetary and funding constraints, the late adoption of technology, and ineffective communication between user departments and IT. At stake are the needed services to maintain a modern technology infrastructure that will support the City of El Paso's stakeholders, citizens and administration. To unite the City of El Paso's stakeholders and provide ongoing direction, a technology vision must be shaped to define an image of the future in terms of technology, functionality, structure, and use. This new vision must be developed through a process with input from the City of El Paso's administrative users and stakeholders. The vision must be aligned with each department's business plans. The end result will be practices that will help ensure a consistent and effective approach is taken to deploy, use and maintain technology that ultimately brings many benefits to the City of El Paso's stakeholders, citizens and administration.

The vision must incorporate an appropriately governed and controlled IT Department with suitable metrics to measure the IT Department's effectiveness in meeting the mission of the City of El Paso. The vision should ensure that systems are maintained appropriately, kept current, are dependable, and secure.

The technology vision is a concise statement to guide the City of El Paso's efforts and provide guidance related to how technology will be obtained, delivered, and utilized in the best interests of its stakeholders, citizens and administration. The vision emphasizes the importance of providing solutions that will ensure the highest level of service. The overarching technology vision of the City of El Paso will state that —

All City information and information-based services are acquired, maintained and kept current in the most cost-effective manner possible. Information and information-based services will be acquired in order to deliver necessary services to the City of El Paso's citizens cheaper, better and faster. All systems acquired and/or developed will be maintained, secured and appropriately backed up to ensure data availability, data integrity and data confidentiality.

3.2 Mission

A Mission Statement defines the main purpose of a department within an organization, the reason for its existence and must be tied to the overall mission statement of the organization.

The mission statement is a declaration of the IT Department's 'reason for being' -- it reveals the long-term vision (as presented above) in terms of what it wants to be, how and to whom it wants to serve.

A clear mission statement is essential for establishing goals and objectives and for formulating plans to meet those goals and objectives. It is the foundation for priorities and is the starting point for the design of the strategic plan.

Accordingly in order to develop a mission statement that addresses the needs of the City of El Paso and the IT department, the following questions should be addressed:

- a. Who is the IT Department? — *The IT Department provides IT applications and support services to the City of El Paso executives, management and staff, as well as its citizens.*

- b. Who does the IT Department serve? — *The operating departments and the citizens of the City of El Paso.*
- c. What does the IT Department do? — *Develop, maintain, enhance, advise and deliver information technology solutions.*
- d. How does the IT Department perform its duties? — *The IT Department operates in alignment with the business and operational objectives of the City of El Paso and its citizens.*

As a result of the above, the mission of the City of El Paso's Information Technology Department is therefore to —

Enable the operating departments of the City of El Paso to fulfill each of their missions effectively by developing, promoting, facilitating, advising and easing the flow of information within the City government, and between the City and its citizens through the use of technology solutions aligned with the business and operational objectives of the City.

In connection with a departmental mission statement, each department must evaluate the City of El Paso's Citywide mission statement and assure that the departmental mission statement will work as connected to the Citywide mission. A department's mission statement indicates what parts of the overall mission the department represents and where the department fits in the City. A department's mission statement is derived from and supports the overall mission statement of the City.

The City of El Paso's Mission Statement is as follows —

Dedicated to outstanding customer service for a better community.

Therefore, the IT Department's Mission Statement supports the overall City Mission by enabling the operating departments of the City to fulfill their individual missions by delivering information technology solutions aligned with the business and operational objectives of the City of El Paso and its customers. Thereby, assuring that the City departments are dedicated to providing outstanding customer service to the citizens in the community they serve.

SECTION FOUR
Guiding Principles for Information Technology

4.0 GUIDING PRINCIPLES FOR INFORMATION TECHNOLOGY

There are five guiding strategic principles directing the City of El Paso’s technology plan. The goal of the strategic planning process is to organize and prioritize for the future as well as provide purpose and direction for the City of El Paso’s IT Department. The strategic principles provide guidance to creating and implementing the best IT strategic plan possible. It is important to understand that the City of El Paso is no different than many other organizations today where funds are finite. This must be taken into consideration and the recommendations prioritized to reflect the limited resources available. Below is a high level overview of the five principles and the strategies from each:

- **Information Technology (IT) Governance**

The need for assurance about the value of IT, the management of IT-related risks, and the increased requirements for control over information are the foundation for IT governance. Value, risk and control constitute the core of IT governance. Therefore, the City of El Paso’s ability to effectively manage IT resources should rely on a more organized and coordinated approach to operating and maintaining its current and future technology assets. Through strengthened IT management, planning and resource allocation, IT value will increase as IT costs decrease. Therefore, a properly implemented IT governance structure ensures the compatibility of appropriately planned systems resulting in a more deliberately focused, uniform, and cost-effective information systems architecture that provides value, minimizes risk, and retains control.

IT Governance Ensures that IT
<ul style="list-style-type: none"> – Is aligned with the organization – Enables the business and maximizes benefits – Resources are used responsibly – Risks are managed appropriately

- **Planned Acquisitions and Implementations**

Appropriate IT solutions need to be identified, developed or acquired, implemented, and integrated into the business process. In addition, changes in the existing systems must continue to meet the City of El Paso’s objectives. This principle directly correlates to the need for the City of El Paso to strengthen its funding and investment processes and place technology expenditures in an overall policy framework supported by the effective IT governance processes (as discussed above). Technology investments must be based on sound business cases¹⁸ and be scrutinized by an information technology governance structure.

Planned Acquisitions and Implementations Ensure
<ul style="list-style-type: none"> – Delivered solutions meet the organization’s need – Solutions are delivered on time and within budget – Systems work properly and as expected when implemented – Changes are made without upsetting current operations

- **Adequate Planning and Organization**

Adequate Planning and Organization Ensures
<ul style="list-style-type: none"> – IT and the organization’s business strategy are aligned – The organization is achieving optimum use of its IT resources

¹⁸ A Business Case illustrates the financial impact of spending money. Rate of return, cash flow, length of payback period, and other financial criteria are all part of the business case.

The principle of adequate planning and organization includes the strategy and tactics, and identifies how IT can best contribute to the achievement of the City of El Paso's objectives. The realization of the strategic vision needs to be planned, communicated and managed for different perspectives. A proper organization, as well as technological infrastructure, should be put in place. This philosophy mandates the standardization of technology assets, methodologies, development, operations, and training across the City of El Paso. Appropriate planning and organization yields significant results in improved performance, efficiency and cost savings. Through adherence to industry best practices, the standards defined in the overall governance process allows the City of El Paso to move ahead with more effective and uniform IT management.

- | |
|--|
| <ul style="list-style-type: none"> - Everyone in the organization understands the IT objectives - IT risks are understood and being managed appropriately - Quality of IT systems is appropriate for the organization's needs |
|--|

• **Appropriate Delivery and Support**

A primary concern for the City of El Paso must be the actual delivery of the required IT services, including service delivery, management of security and continuity, service support for users, and management of data and operational facilities. The City of El Paso provides critical services to the public. Therefore, systems essential to the performance of critical services need to be maintained in a manner that protects them from as much unforeseen downtime as possible. Furthermore, information that has been entered in these systems needs to be regarded as highly valuable and backed up on a frequent basis.

- | Appropriate Delivery and Support Ensures |
|---|
| <ul style="list-style-type: none"> - IT services being delivered in line with the organization's priorities - IT costs optimized based on the organization's needs - Use of IT systems productively and safely - Maintenance of confidentiality, integrity and availability |

• **Monitoring and Evaluating**

Monitoring and evaluating performance verifies compliance with IT governance. In addition, the process of monitoring and evaluating also ensures accountability and continued return on investment. All IT processes need to be regularly assessed for their quality and compliance with the original and continuing requirements of the City of El Paso. A standard set of metrics should be identified that provides insight into the expectations, outcomes, and performance of the IT process. Established targets must be prepared based on the process goals and the performance drivers that mirror the achievement of IT's objectives and goals. The metrics must be reviewed periodically to ensure that the IT objectives are being met.

- | Monitoring and Evaluating Ensures |
|--|
| <ul style="list-style-type: none"> - IT performance is being measured to detect problems before it is too late - Internal controls are effective and efficient - Performance is linked back to organization goals - Confidentiality, integrity and availability controls are in place for information security |

SECTION FIVE
Business Environment

5.0 BUSINESS ENVIRONMENT

As a first step in the strategic technology planning process, the City of El Paso's business needs have been reviewed. These business needs were defined through interviews with management representing each of the operating departments within the City of El Paso, interviews with selected members of the City of El Paso's management within the Information Technology Department, and other internal City of El Paso research. The business needs defined have been on a near term rather than strategic time horizon. The business goals, objectives, issues, opportunities, and directions identified provided benchmarks against which the systems assessment, strategies, and plans were developed. These components relate to one another in that goals and objectives provide a foundation from which to mobilize the development and implementation of directions and opportunities. Issues are problems or concerns that can stand in the way of an organization's ability to realize its goals or pursue opportunities. Ultimately, these business concepts will drive what technology decisions are made to move the City of El Paso closer to fulfilling its mission and vision.

Results of the fact-finding work conducted in support of the technology strategic planning process revealed a number of common themes across the enterprise. Each of these areas is described further below, providing a summary of the lessons learned throughout this process.

5.1 SWOT Analysis

Once the vision and mission were defined, we reviewed the current situation in terms of what processes are in place and the maturity of the organization. The best way to discover these are through a Strengths, Weaknesses, Opportunities, and Threats (SWOT)¹⁹ analysis of the organization and the IT department. To discover the challenges we performed a SWOT analysis on the information obtained from interviews with the management of each of the operating departments, with selected members of The City of El Paso's management within the Information Technology, and other internal City of El Paso research.

The SWOT Analysis involves the review and analysis of four specific areas of an organization: the internal strengths and weaknesses, and the external opportunities and threats. Once analyzed, actions should be taken to:

- Develop, exploit and capitalize on the organization's strengths
- Reduce, minimize or remove weaknesses
- Take maximum advantage of opportunities
- Manage, mitigate and eliminate threats.

The first step is to define the desired end state or objective. The desired end state is summarized in the Vision Statement as previously discussed.

¹⁹ A SWOT Analysis is a technique that reviews and analyses the internal strengths and weaknesses of an Organization and the external opportunities and threats that it faces SWOT stands for Strengths, Weaknesses, Opportunities and Threats.

To perform the SWOT analysis we focused on a series of key questions to highlight the various SWOT components:

- **“Strengths”** are internal attributes of the organization that are helpful to the achievement of the objectives.
- **“Weaknesses”** are internal attributes of the organization that are harmful to the achievement of the objectives.
- **“Opportunities”** are external conditions that are helpful to the achievement of the objectives.
- **“Threats”** are external conditions that are harmful to the achievement of the objectives.

When developing the Information Technology Strategic Plan it is necessary to focus on the areas that need improvement. Some of the areas for improvement are very much internal in nature; however, in many cases the drivers are external in nature. The external factors can and do include changes in the:

- Way services are delivered from the user department’s to the citizens
- Type of services delivered to the citizens
- Services offered by the City to its citizens
- Legal or regulatory environment.
- Basic economic condition
- Complexity of technology offered to the users of the applications

To obtain information and develop an understanding of what the drivers are behind the needs of the City’s operating departments framing questions were developed and used in the operating department group and individual meetings. The questions directly correlate with the SWOT focus (see the graphic on Exhibit E.) The key framing questions posed to the operating departments were:

- Related to strengths:
 - What does the City of El Paso’s IT Department do well?
 - What advantages does the City of El Paso’s IT Department bring to the Organization?
 - What valuable resources does the IT Department provide the City of El Paso?
 - What do users, member, and stakeholders view as strengths?
- Related to weaknesses:
 - What can the City of El Paso’s IT Department do better?
 - What is the City of El Paso’s IT Department criticized for?
 - What complaints does the City of El Paso’s IT Department receive?
 - Where is the City of El Paso vulnerable due to the IT Departments actions or inactions?
- Related to opportunities:
 - What opportunities does the IT City of El Paso know about but has not addressed?
 - Are there emerging trends in IT that the City of El Paso can use or take advantage of?
 - Has the City of El Paso invested in software and/or IT infrastructure that is unused or under utilized?

- Related to threats:
 - Are IT weaknesses likely to make the City of El Paso vulnerable?
 - What road blocks are likely to exist due to the existing IT organization structure?
 - Are there changes likely to affect the City of El Paso’s IT coming in the near term?
 - Are conditions economic or otherwise likely to affect the IT environment?

The focus of the exercise is to develop a plan to leverage the strengths, understand how to overcome the weaknesses, capitalize on the opportunities, and mitigate the risks and threats in the environment.

With the SWOT analysis (see Exhibit F) we were able to cleanly determine critical opportunities and risks. The opportunities and risks can be grouped into two focus areas: one related to technology, and the other related to the IT Department’s customer service.

Strengths	Weaknesses
Opportunities	Threats

Technology Related SWOT

Strengths included:

- Support from all levels for the IT function
- Strong Helpdesk support
- Turnover in IT has improved
- Good Software for the Library system - SirsiDynex library system – integrated database and application on the same server. Web application is on a separate box in the DMZ.
- Uptime of critical applications is exceptional.
- Centralization seen as a plus.
- GIS division has been very helpful.
- Good project involvement.

- **Leverage strengths**
- **Overcome weaknesses**
- **Capitalize on opportunities**
- **Mitigate risks**

Weaknesses included:

- Deficiencies in the Data Center
- Infrastructure (Fiber, Com Lines, Licensing, etc.)
- Limited or no redundant power to support infrastructure
- Limited Phone Capabilities
- Replacement Planning. (Outdated Equipment and Software)
- Printers – use standardized printers or departmental printers to reduce printing costs.
- Succession planning for all areas but also IT.
- Badging and proximity systems integration for all areas
- Redundancy of vital resources for DR planning.
- Lack of Intranet and external WEB design and support
- Collaboration effort to utilize existing (Like) systems rather than purchasing a new one.
- Redundant license fees & added support needed

Opportunities included:

- Proactively meet with departments to discuss needs and projects (More proactive than reactive)
- Business Analyst function needed.
- Current phone system equipment could be leveraged to implement additional phone and email functionality.
- Additional resources to clean up GIS issues
- Combining functions of departments into the same software solutions.
- Emerging new technologies

Threats included:

- Resources and funding to support the current environment
- Power and cabling are issues with respect to the updating of voice communications and potential movement to VoIP.
- Data Center is at risk of catastrophic failure due to: water leak, sewage leak, heat, and fire.
- CAT3 at some CAT5 wiring in some locations
- Hacking internally by the public.
- Outdated peripherals no maintenance
- Theft because the camera and security systems is not up to date.
- Inventory of Equipment is not complete.

Customer Service Related SWOT

Strengths included:

- IT Department supports all levels of technology
- Strong Helpdesk support
- Low level of turnover in the IT Department
- Strong application capabilities within operating departments
- Appropriate uptime of critical applications
- Operations see IT centralization seen as a plus
- GIS division has been very helpful
- Good project involvement by IT Department
- IT management and staff possess the right attitude, values, and commitment

Weaknesses included:

- No training component with IT Department
- Lack of Capital Improvement Plan funding for City-wide IT infrastructure
- In ability / lack of refresh planning for operating departmental IT infrastructure
- GIS system operating department disparate needs / accuracy
- Data storage space availability
- Public Safety issues. Not enough cameras or monitoring of the assets.

- E-mail is slow and sometimes locks up the computer.
- Installation desktop flexibility (Allow for power users).
- Lack of communication and collaboration.
- Lack of monitoring and reporting tools

Opportunities included:

- Proactively meet with departments to discuss needs and projects (More proactive than reactive) – Business Analyst function
- Proactive bandwidth planning
- Proactive refresh planning
- Transparency in IT capital improvements for refresh planning
- Application experts in functional areas
- Business Analyst function within IT Department
- Expanded Helpdesk hours
- Wireless Access
- Additional functionality desired by functional units
- Efficiencies through more integrated operations
- Deploy a City-wide document management system (Documentum)

Threats included:

- Loss of revenue, incorrect billing, etc.
- Increased operating costs due to inefficiencies
- Lost opportunities to support the mission and objectives of the City's operating unites
- Loss of public trust (city appears inefficient and out-dated)
- Errors causing legal liability to the City
- Inability to provide comply with new regulatory requirements
- Un-trained staff causing errors, inefficiency and liability
- IT system failures due to outdated and inefficient equipment
- Security breaches

5.2 Strategic Goals and Objectives

Based upon the SWOT analysis we developed the goals and objectives for the strategic planning process related to the business environment as presented below.

Goals and Objectives Summary	
<ul style="list-style-type: none"> • Re-engineer business processes beyond IT • Improve web interaction with citizens • Improve access to stored data • Additional resources dedicated to GIS cleanup and maintenance. 	<ul style="list-style-type: none"> • Make better use of existing applications removing “Silos” where possible • Implement a Citywide document management system.

Strategic goals for each department within the City of El Paso directly support the mission of the City of El Paso. Objectives represent the specific actions that the IT Department strives to undertake with respect to reaching its stated goals. These goals and objectives should typically be updated on an annual basis requiring a specific set of projects and initiatives to achieve and sustain over time. Ideally, goals are specific, attainable, and timely, so that demonstrated progress can be gauged. Similarly, objectives denote the action-oriented tasks that have been delineated to accomplish the overriding goals. Goals and objectives require commitment, focus, and investment to achieve, with buy-in from top levels of management to ensure that goals are implemented. The goals and objectives identified by the agencies have been derived from the business planning documents that were submitted as part of the planning process. Because goals tend to focus at a high level, there are some core themes that emerged from our analysis. These themes are introduced below, with relevant examples and variations provided as appropriate.

5.2.1 Re-engineer Business Processes Beyond IT

Beyond addressing day-to-day operations, each of the departments are hard pressed to find the time and resources to analyze processes and procedures, assess progress against goals, and plan and execute business process improvements. Several goals identified in this area include the following:

- Finding resources to conduct analysis
- Instituting best practices
- Improving business processes by implementing enterprise applications
- Technical reorganization to consolidate efforts where and when possible
- Reallocating staff time on information-sharing activities to eliminate duplication of efforts and streamline processes

The business analyst function within each of the City’s portfolios would perform analysis of the operations in functional areas and departments within the organization with the purpose of developing general system solutions to problems that may or may not require automation. The analyst would provide insights into departmental operations and where appropriate and necessary, proposing re-engineering to business processes.

5.2.2 Improve Web Interactions with Citizens

The City of El Paso has strategic policy goals that state the City is to “Develop a customer-driven Information Technology Strategic Plan to guide the ongoing development, management, and coordination of IT resources and services within the municipal government”, focusing on:

- Customer Service: To be a high-performing, customer-focused organization
- Citizen Involvement: To facilitate opportunities for citizens to be involved in local government

The strategies associated with this stated goal include to:

- Establish and maintain a primary point(s) of contact for community issues, such as community events/activities enrollment inquiries, payment status requests, and any other community issue questions.
- Optimize the use of technology to communicate with citizens, including development of online access to allow citizens to review and manage aspects of payments, classes, etc. status and related information via the Internet.

In order for the City of El Paso to achieve this and other stated goals, it must ensure that the citizens are aware of the services or information that they provide, including increasing public knowledge of the City of El Paso’s Web site.

Improving Web interactions with citizens when handled correctly offers many benefits, including increased citizen satisfaction, increased productivity, and reduced operations costs. Moving routine citizen interactions online saves costs. Citizens are able to answer routine questions—with increased citizen satisfaction.

The City of El Paso’s Web site should be data enabled to create effective new ways to address citizen concerns, aggressively implementing a multiple channel, automated citizen service strategy.

This can include citizens:

- Updating information
- Paying fees
- Web security cameras
- Registering for park/recreation activities
- Checking account information

5.2.3 Improve Access to Stored Data

Most departments are facing challenges in collecting, managing, and leveraging data into useful information that supports decision making and efficient business practices. Goals in this area include the following:

- Increased data access
- Two-way communications with stakeholders
- Reliable, efficient, and cost-effective databases
- Strengthened data integrity
- Clear information exchange between departments and with external partners
- Information systems that work in a reliable manner
- Increased data storage capabilities

The data from the production databases should be copied to a data warehouse²⁰ so that queries can be performed without disturbing the performance or the stability of the production systems. The data warehouse should be structured to support a variety of analyses, including queries on large amounts of data that can require extensive searching.

The data warehouse will assist the departments in the organization in analyzing member data for better member service and in some cases to reduce the time required for staff members to manually perform analysis.

When selecting new applications to replace or enhance current applications, a common database should be preferred between all applications (i.e. Oracle, Microsoft SQL Server). This will provide for easier movement from the production databases to the data warehouse.

5.2.4 Additional Resources Dedicated To GIS Cleanup and Maintenance

Discussions indicated that the current state of the GIS system is not acceptable to many of the departments who depend on its information. Given the current resources dedicated to the GIS system the departments are appreciative of the support and information that is available but in many cases do not feel it is adequate for the function they are trying to perform. In many cases respondents are concerned that inaccurate information may lead to costing the City due to inaccurate fine assessment and/or billing.

- The following are issues noted with the current level of support and accuracy of the GIS information:
 - GIS address information is inaccurate. GIS layers have helped, but need more support. Not everyone can see all the layers available. Every department is responsible for maintaining and updating their own layers.
 - Street department is highly dependent on GIS and needs more effective support and system updates in this area; need more personnel resources dedicated to GIS as well.
 - Each location is maintaining its own GIS because the bandwidth is so poor. There are 5 GIS systems in the City that are distributed due to lack of connectivity. Information is therefore inconsistent across users.
 - GIS – System is not good. Not enough resources split between water utilities and City. Data is outdated (Appraisal layer). The environmental department is sending bills to wrong individuals. The way the subdivisions are built causes virtual and other issues. Duplicates (Over 11,758 on first pass)
 - End-user training (entry level especially) is needed on the GIS system.

²⁰ A Data Warehouse is a database designed to support decision making and data analysis in an organization.

5.2.5 Make Better Use of Existing Applications

In order for the City of El Paso to remain viable and operate cost-effectively, the City of El Paso must look for ways to make the best use of all its existing assets, including IT assets.

The City of El Paso has investments in applications that are not being utilized to their fullest extent. In addition there are several applications in existence that have the same functionality used by individual departments. The reasons for the underutilization and replication of functionality vary. However, with appropriate resources, training, and an understanding that these applications can be made to work, the value of the investment would not be lost. These applications include:

- Document Management – a document management system would provide the City of El Paso many benefits. Currently the City has several document management systems making the sharing and linking of documents next to impossible. A Citywide document management system can provide the ability to physically manage the data-containing documents including:
 - Search capabilities
 - Enhanced security over documents
 - Create document-to-document relationships
 - Other useful features

As with any large application, enterprise document management systems can be a difficult tool to implement. Therefore, implementation must be appropriately planned and executed to be successful. The City of El Paso has a large amount invested in document management. These tools are valuable and the asset should be coordinated and utilized to the largest extent possible.

- PeopleSoft – The City of El Paso has a significant investment in Oracle’s PeopleSoft system. PeopleSoft is a true ERP system since it is a business support system that maintains in a single database, the data needed for a variety of business functions including but not limited to general accounting, procurement, projects, human capital management and customer relationship management.

The PeopleSoft system is based on a common database and a modular software design. The common database will and should allow the diverse departments of the City of El Paso to store and retrieve information in real-time. The information would then be accessible and easily shared. The modular software design means that the City of El Paso can select from many modules that could support additional department needs. The City of El Paso can mix and match modules, and add new modules to support a diverse set of business operations and streamline operations if and where possible.

At the present time the City of El Paso makes use of a fraction of the PeopleSoft’s modules available including:

- Asset Lifecycle Management
 - Campus Solutions
 - Customer Relationship Management
 - Enterprise Performance Management
 - Enterprise Portal
 - Enterprise Service Automation (Project Management)
 - Financial Management
 - Human Capital Management
 - Supplier Relationship Management (Procurement)
 - Supply Chain Management
 - PeopleSoft Enterprise Tools & Technology (Peopletools)
- Existing software and its capabilities should be understood by the Business Analyst group to ensure the use of current applications are exhausted prior to the purchase or creation of additional software to satisfy the business needs of the departments.

5.2.6 Implement a Citywide Document Management System

During the interview process we discovered that while several departments make use of Documentum for their imaging and document management needs, there are several departments that have no knowledge or idea that an imaging and document management solution exists. Business Analysts should be utilized to identify areas where a centralized imaging and document management solution could be leveraged across departments.

This should include identifying other document management systems in use, end move towards a single application to increase the ability of information technology to support the application. The use of one standardized document management system would increase the ability of interdepartmental workflow allowing all departments to share each others documents.

5.3 Strategic Issues

Based upon our analysis we developed a list of strategic issues related to the business environment for the City’s IT Department to overcome.

Strategic Issues Summary	
<ul style="list-style-type: none"> • Missing Business Analysts in each of the Portfolios • Lacking Project Management Tools and Function. • Missing IT Liaison (Steering) Committee 	<ul style="list-style-type: none"> • Missing Change Control Board (CCB) • Application Ownership Not with User Departments • Funding Constraints

Strategic issues represent the key challenges or problems that directly impact the City of El Paso IT department’s ability to achieve the stated mission and strategic goals.

5.3.1 Missing Business Analysts in Each of the Portfolios

The process of implementing change is disruptive and requires careful management to avoid potential negative side effects (decrease in productivity, extended learning curve, etc.). The potential for the acquisition and implementation of any new application should be viewed as an opportunity to re-engineer business processes thereby streamlining operations and making them more efficient.

The Portfolio’s do not have a Business Analyst function. A business analyst in the individual City Portfolio will be responsible for analyzing the business needs to help identify business problems and propose solutions (automated or manual). The business analyst typically performs a liaison function between the business side of the enterprise (The City of El Paso functioning departments) and the IT department. The Business Analyst works as a liaison among the stakeholders in order to elicit, analyze, communicate and validate requirements for changes to business processes, policies and information systems. A business analyst will understand business problems and opportunities in the context of the requirements for the individual City Portfolio they are responsible for. They will recommend solutions that enable the organization to achieve its goals.

5.3.2 Lacking Project Management Tools and Function

It is difficult for the City of El Paso to maintain, track and manage the individual departmental IT projects efficiently. The individual department must take ownership of the IT Project deployments in partnership with the City's IT Department. An IT project management function should work in concert with the individual departments as plan, acquire, develop and implement IT in their functional area. The IT Department does not presently have a project management function dedicated to departmental IT projects. In addition, the departments (including IT) do not have adequate project tracking and management tools. The project management function would monitor the time, materials and status of the projects being undertaken by the functional departments within the City. The Project Management function would track all tasks to complete the project. It would assure that the critical path and the series of tasks are effectively accomplished. This function would keep track of all information systems projects from inception to deployment through all stages. The reporting capability of this function would provide the needed metrics to add a level of transparency into the effectiveness of the IT Department in performing its tasks.

In addition to implementation of the project management function we recommended that the City look at an overall investment in MS Project Professional. The ability of MS Project to assist project managers Citywide would greatly enhance the project management capability. In addition, it will add an element of transparency to the project management capability.

With multiple projects, staff, and requests from the individual departments it has become necessary to formalize this area to prevent project over runs, increased costs, loss of requests, etc.

5.3.3 Missing IT Liaison (Steering) Committee

The increased pressure on public agencies to do more with less is causing the need for greater prioritization of projects and reduced spending. The steering committee should provide general reviews for the City management regarding major IT projects. The overview the committee provides enables the City management to make decisions without becoming involved in routine operations. The committee helps to ensure business alignment, effective strategic IT planning and oversight of IT performance. The committee may also:

- Oversee the development and maintenance of the IT strategic plan
- Approve vendors used by the organization and monitor their financial condition
- Approve and monitor major projects, IT budgets, priorities, standards, procedures, and overall IT performance
- Coordinate priorities between the IT department and user departments
- Review the adequacy and allocation of IT resources in terms of funding, personnel, equipment, and service levels

The steering committee should receive the appropriate management information from IT departments, user departments, and audit to coordinate and monitor IT resources effectively. The committee should monitor performance and institute appropriate action to achieve desired results. The committee should also maintain formal minutes of its meetings to document its decisions and inform the City management of its activities and progress.

5.3.4 Missing Change Control Board (CCB)

The City of El Paso has a very large and complex technology presence. Changes to applications, hardware, etc. should be centrally reviewed and approved for all areas of the City. The creation of a Change Control Board (CCB) to make decisions regarding whether or not proposed changes to a software, project, or system should be implemented, assists communication across the City as well as assure only the necessary changes are performed. The change control board is constituted of the portfolio management or their representatives, and IT Department leadership.

5.3.5 Application Ownership Not With User Departments

The end user departments within the City of El Paso appear to hold the City of El Paso IT department responsible for the business applications as Application Owner. In general, it appears the departments in effect do not accept the responsibility for their individual applications. Common IT practices provide a distinction between Application Owners (the department directors and management) and Application Custodians (the IT Department) within an enterprise.

Application Owner

The Application Owner is accountable for the specific application within an organization regardless of where the underpinning technology components, processes or professional capabilities reside. Ownership is as critical to management as establishing ownership for processes which cross multiple vertical silos or departments.

The Application Owner is ultimately responsible for participating in the selection and successful implementation of the application for their area of responsibility. The Application Owner is also uniquely qualified to understand the business need in their area. The Application Owner therefore, must be accountable for the applications selected and their successful testing and implementation. In addition, the Application Owner is responsible for:

- Providing input on service attributes such as testing, acceptability, performance, availability, etc.
- Representing the application across the enterprise
- Understanding the application its components, capabilities, limitations, etc.
- Providing a point of escalation (notification) for major incidents
- Participating in internal and external review meetings
- Participates negotiating SLAs

Application Custodian

The Application Custodian (IT Department) has system administration responsibilities to maintain the appropriate environment for the application including:

- Assuring the application is running on the appropriate hardware
- Assuring the application is installed on servers running the appropriate operating systems at the correct patch level
- Assuring that the database used by the application is at the appropriate patch and revision level and installed on the appropriate hardware
- Assuring that the application environment has the appropriate capacity to support the application service level requirements
- Monitoring the application and associated data for capacity and maintenance issues

- Coordinating with Application Owners as to when to apply service patches and other updates
- Coordinating application maintenance schedules with owners
- Ensure adherence to the City of El Paso guidelines and procedures for protecting data as appropriate for IT security practices
- Maintaining confidentiality, availability, and integrity of the data in the application
- Ensuring that documentation of data resources created, used, or stored within their area of control is maintained
- Ensuring that systems containing sensitive information are physically secured from unauthorized access.
- Ensuring that data is backed-up according to the direction of the Application Owner

5.3.6 Funding Constraints

The U.S. is experiencing a dramatic economic contraction. There is increased pressure on public agencies to do more with less. The City of El Paso is facing the need to “tighten its belt.” In the same timeframe the departments and citizens are demanding real-time information from organizations such as the City of El Paso. This requirement will mandate that the City of El Paso improve its IT infrastructure allowing for real-time information access. As resources available to provide services are diminishing, the need for such services is increasing. The strategic plan assumes that the goals achieved through implementation of the plan would allow the City of El Paso to allocate resources differently. This reallocation would be developed by the business analyst and approved by the IT Liaison Committee and City management.

SECTION SIX
Technology Environment

6.0 TECHNOLOGY ENVIRONMENT

6.1 Strategic Goals and Objectives

Based upon our analysis we developed the goals and objectives for the strategic planning process related to the technology environment as presented below.

Goals and Objectives Summary	
<ul style="list-style-type: none"> • Minimize or Eliminate Single Points of Failure • Increase Bandwidth to Locations with Dial-up and T1 Access. 	<ul style="list-style-type: none"> • Replace Telephone Systems • Proactive Bandwidth Planning. • Proactive Refresh Planning • Improved Service Delivery

Strategic technology goals for the City’s Central IT Department directly support the mission of the City’s individual business units. Objectives represent the specific actions that the IT Department should strive to undertake with respect to supporting the global infrastructure of the City. Again, like the business goals and objectives; the technology related goals and objectives should be updated on an annual basis requiring a detailed set of projects and initiatives to achieve and sustain over time.

6.1.1 Minimize or Eliminate Single Points of Failure

There are several instances where one device, communication line, or staff member is used to performing a function. In order to ensure continuous operation, two or more devices, communication lines, or staff members should be used. Any IT operation that contains only one component to do a job creates a single point of failure opportunity. If that single component fails or is absent, there are no alternates to take their place. To eliminate single points of failure:

- Switching and routing equipment should be redundant with failover capability
- Critical communication lines between facilities should be redundant
- Critical servers should be load balanced with failover capability
- Critical data should be replicated where possible and cost effective
- Cross training of IT staff should be mandated to assure adequate coverage
- Where cross training is not practical Service Level Agreements should be placed with appropriately staffed vendors to support emergency situations
- Datacenter deficiencies should be corrected (either by retrofit or through the total replacement and move) to prevent failure of equipment and service outages. The deficiencies noted are as follows:
 - Water and sewer pipes run directly overhead of the equipment.
 - The datacenter is located in the basement of the building; if achievable it should be moved to a higher floor in the building to prevent damage in the event of flooding.
 - There is no automatic temperature regulation. It is done manually so the temperature (when we were present was 78°) rises and falls as it is turned on and off. As temperature rises and falls equipment expands and contracts leading to possible failures.
 - The datacenter is being used for storage of paper goods as well as other equipment.
 - The type of fire suppression used is WET pipe; consider the use of a waterless fire suppression system like FM-200 where applicable.

- IT employees are seated and work within the datacenter. Consider moving their work area outside the datacenter walls.
- The current generator does not have the capacity to cover all of the equipment within the datacenter. Consider increasing the generator capabilities to ensure all critical equipment in the datacenter has power redundancy.

At a minimum the datacenter equipment should be moved to a location where overhead water and sewer pipes do not exist, or placed in water resistant cabinets. In addition, the equipment should be moved to a higher floor in the building to prevent damage in the event of flooding. Other requirements for the datacenter include but are not limited to:

- An HVAC²¹ (CRAC²²) system to control the temperature and humidity levels automatically assuring a proper environment for the computer equipment.
- Fire suppression systems within the datacenter limited to a minimum of a pre-action dry pipe system with a preference for a gas based fire suppression system.
- Adequate power backup with an appropriate battery backup as carry-over to a generator with ample capacity to support all the computing equipment in the datacenter as well as the CRAC unit.

6.1.2 Increase Bandwidth to Locations Experiencing Communication Issues

During the interview process we discovered that several departments are experiencing communication issues. In some cases data may not be entered until persons travel to the city hall location. Listed below are the departments and their comments that were noted during the interview process:

- Engineering – “Fragile Infrastructure”
- Streets – “Communications to facilities are weak”
- Libraries – “Need fiber at all libraries”
- Zoo – “Need Fiber to the Zoo”
- Audit – “Increased connectivity to remote locations”
- Airport – “Not a good connection from City Hall to the airport (T-1 only)”
- Health Department – “Connectivity needs to be increased (T-1)”
- MCAD – “Connectivity speed is an issue”
- Fire Department – “System is very slow. (input of runs) Delays medical billing Need speed.”
- Parks – “Connectivity (5 locations) 50+ sites for connectivity DSL, Cable...”

Many of the departments identified connectivity issues with the email system (Outlook). These issues ranged from locking up the entire system to slow retrieval of email.

It is necessary for the City to update its WAN connectivity to fiber to achieve the vision and requirements that the departments are placing on IT. Without the increase in bandwidth that fiber provides, the City’s IT infrastructure will present the following issues:

- Application speed will continue to be a problem at the remote city offices

²¹ HVAC – Heating, ventilation, and air conditioning systems.

²² A CRAC unit is a computer room air conditioning unit. This is a device that monitors and maintains the temperature, air distribution and humidity in a network room or datacenter. CRAC units replace air-conditioning units used in the past to cool datacenters.

- Application speed of newer more graphically intensive applications will be a problem as applications are updated
- The benefits and deployment of VoIP will not be possible
- A potential redundant site for critical applications and data will not be possible due to lack of speed
- As graphically intensive applications are added to the exiting network speed of all applications will degrade

Currently there is a fiber project in progress within the City's IT department. We recommend this project be reviewed to assure appropriate connectivity for all areas of the City given the existing issues as well as future technology rollouts that will require expanded bandwidth. Metrics and appropriate levels of bandwidth²³ should be set for the critical departments' communication lines. Information Technology should monitor the bandwidth and report on these metrics for the critical communication lines to the individual departments.

6.1.3 Replace the Telephone Systems

An opportunity identified by the SWOT included a newer more advanced telephone system to assist in updating the capabilities of the City of El Paso. A new phone system will allow for modern integration between telecomm and the City of El Paso's application data (Call Center management). Call Center management will provide the City of El Paso the power to organize its telecom asset inventory, and optimize its telecom network, using modern web-based solutions. In addition, features available once the system has been replaced include but are not limited to:

- Contact management
- Customizable fields
- Customizable reporting
- Outbound reporting
- CRM integration
- Customizable functionality
- Data import/export
- Additional Voicemail capabilities

6.1.4 Proactive Bandwidth Planning

Metrics and appropriate levels of bandwidth should be determined for the critical departments' communication lines, applications, etc. Information Technology should monitor the bandwidth and report on these metrics on a periodic basis. Bandwidth increases should be budgeted for on an annual basis based on the results of these metrics.

All projects including the implementation, expansion, or additional user base of hardware, software or any other asset utilizing the communication lines should include a review of required bandwidth as part of the requirements phase of each project, this will prevent the breaches to capacity with a new implementation.

²³ Bandwidth is defined as the transmission capacity of an electronic pathway such as a communications line, computer bus or computer channel.

6.1.5 Proactive Refresh Planning

The hardware life cycle or refresh period is the amount of time that hardware is used before it is replaced with new hardware. IT organizations working with reduced budgets often delay refreshing their hardware. And to avoid lump-sum hardware costs, cities often refresh only a portion of their hardware at one time. But delaying the refresh can lead to higher support and productivity costs, and staggered refreshes can result in higher deployment costs for cities that outsource their IT infrastructure. Therefore, a question IT decision makers are inclined to ask is, "What is the optimum refresh cycle, and what is the optimum refresh method?"

Desktops:

The Optimum Refresh Cycle and Method for desktop refreshing is to perform all PC desktop hardware replacements at once (the "forklift" method) every three years, providing the best overall cost savings. Completing a three-year refresh cycle can help reduce total cost of ownership (TCO). This is due to the high costs associated with patching, support, upgrade, and warranties, which make the production time beyond approximately the third year of production very costly.

File Servers:

Typical hardware refresh cycles are 12, 24, or 36 months for file servers. If the City frequently adds new file servers to increase capacity or add new functionality, consider using a relatively short replacement cycle for file servers. This recommendation is based on the high rate of change in computers, disk subsystems, and other components. Maintaining a shorter cycle prevents the problem of servers that were purchased at the beginning of the cycle becoming obsolete before the end of the cycle. However, a shorter life cycle affects the manageability of file servers, because you must replace hardware, install the operating system and applications, and migrate data more frequently.

Infrastructure:

Network infrastructure includes but is not limited to repeaters, routers, switches and other communication devices that are used to connect desktop systems to the network have an industry standard refresh cycle of five (5) years to assist in the reduction of total cost of ownership (TCO). This is due to the high costs associated with patching, support, upgrade, and warranties, which make the production time beyond approximately the fifth year of production very costly.

We recommend that a budget be created and reviewed annually for the refresh of IT assets. The budget should be rotating on a three-year cycle to provide vision into the capital needed for the necessary refreshes. It should be noted however, technical decisions to upgrade, replace, or extend the life will continue to be made based on industry trends, software development cycles and the cost of each option as we approach a decision point.

6.1.6 Improved Service Delivery

Service delivery is how information and technology services are provided to the employees and the citizens of the City of El Paso. Several of the service delivery areas are considered to have strategic implications. Weaknesses (See Exhibit B – Survey Results) of particular concern include the lack of the following:

- Formal agreements between the IT Department and customers, in which performance commitments and expectations are set and documented in the form of service-level agreements
- Coordinate and communicate the 24 x 7 support functions
- Additional training for all departments

To address improved service delivery there are three primary areas of focus that the IT Department must attend to:

- Support/Help Desk
- Development
- Strategic Outsourcing
- Internal Access to IT Training

Support/Help Desk

Help desk personnel provide a central source of assistance to end-users. The help desk capabilities, while good, offer a narrow scope of assistance. At times this resource misses the root cause of problems that are reported.

The help desk supports the City of El Paso users and operates Monday through Friday, 7:00 A.M. to 5:00 P.M. The help desk generally focuses on problem management for network and desktop issues. Because some departments and staff will work outside the hours of help desk operation, they indicate that they have experienced inefficiencies in their ability to work due to problems that can not be resolved during normal work hours.

Weaknesses disclosed included:

- Help desk hours of operation are not sufficient to support existing operations, especially graveyard shifts.
- Help desk hours of operation will not be sufficient to support citizens using web interface when implemented.
- Application specific help desk knowledge is limited.

Development

The strategic planning process identified in many of the operation departments the requirement for new and additional functionality in WEB applications. In the majority of the operating departments there was a concern for movement in this direction due to lack of available resources with the skill set to develop in and support a .NET GUI environment. In the current Information Technology organizational chart there are four (4) WEB program positions defined. Currently only two of those positions are filled. With the current operational department requests for additional functionality it is necessary to actively recruit and fill the two open positions. The IT Skill set survey, deployed in the planning process, results confirm the lack of resources available in the .NET and other WEB application development toolsets.

Strategic Outsourcing

While no firm numbers were provided on this study, the City of El Paso appears to make minimal use of outsourcing as a way to access needed resources and provide services to end-users. What outsourcing has been pursued has been tactical in nature, as opposed to strategic. When outsourcing is used, it appears to be primarily for two reasons:

- a. Accessing technical assistance not otherwise available on-staff in the IT Department
- b. Supporting projects with research and requirements gathering

Outsourced technical services that have been acquired include telecommunications engineering and support, application support and implementation, cabling, and certain programming.

Strengths disclosed included:

- Outsourcing is used to augment skills not otherwise available
- Management recognizes that not all needed skills are available from within the IT Department

Weaknesses disclosed included:

- Little formal study has occurred related to the benefits, opportunities, and relative costs of outsourcing
- Outsourcing is not viewed as a strategy but as means to endure

Many local government organizations make use of strategic outsourcing in:

- Application development
- WAN Network support services
- WAN Infrastructure services
- General Telecomm services
- Server specific support services
- Application specific support services

For the City of El Paso outsourcing would be beneficial when working with:

- Specialty software for the individual departments.

Currently the City relies on internal support and vendor help desk for specialty software support. It would be beneficial to investigate the use of outsourced vendors to support specialty applications like those used by Police and Fire.

- WAN support for connectivity between City locations.

It may be beneficial for the City not lease or build-out its own fiber for connectivity between City offices. In cases such as this, 3rd parties will implement and support the fiber connectivity between City sites.

The City may want to analyze the potential for strategic outsourcing for the above services. It is important to note; any decision to outsource must be carefully analyzed assuring the decision is not based on cost alone. The decision must assure that the service to the customer end users will not degrade over what the City can offer internally.

Internal Access to IT Training

Training, in its most basic sense, gives employees the information necessary to perform a task proficiently. This is especially important for using the information systems tools available. It is easy to understand that new employee orientation gives the new employee a sense of the City's goals; IT training (both in orientation and in ongoing training) provides the tools to achieve those goals. Providing ongoing IT training is a strategy that the City can use to attract, motivate, and retain good employees.

Training allows employers to:

- Provide technical job skills and knowledge necessary to perform jobs duties and organizational tasks
- Improve employee productivity and efficiency
- Invest in the City's future through efficiency and providing added services
- Create a flexible work force that can adapt quickly to change in the business environment
- Give employees the skills necessary to apply for higher City positions as opportunities arise
- Develop group and team skills needed for organizational tasks and objectives
- Increase morale, self-development, commitment to lifelong learning

While source of IT training can be argued as originating from either the Human Resources Department or the IT Department, the source is secondary to the fact that for the most part there is currently no budget for IT training. Therefore, IT training is very limited internally (for both users and IT technical services staff). Within the current economic constraints, we suggest that the City utilize free seminars where and whenever possible, free (and if needed pay-per-use) on-line webinars and outsource fee training to support the technical needs of the IT support personnel.

6.2 Strategic Issues

Based upon our analysis we developed a list of strategic issues related to the technology environment for the City's IT Department to overcome.

Strategic Issues Summary	
<ul style="list-style-type: none"> • Lacking Project Management Tools and Function • Missing Standards, Uniform and Searchable Documentation • Missing SLA's and Metrics 	<ul style="list-style-type: none"> • Funding Transparency – Technology Refresh and Planning • Information Technology Trainers do not Exist within the City Organization

Strategic issues represent the key challenges or problems that directly impact the City of El Paso IT department's ability to achieve the stated mission and strategic goals.

6.2.1 Lacking Project Management Tools and Function

Like the City's overall business environment, the IT department has difficulty maintaining, tracking and managing projects efficiently, given the lack of adequate project management tools. An IT department project management function monitors time, materials and status of projects. The Project Management function must track all tasks to complete the project both timely and on budget. This function will assure that the critical path and the series of tasks is maintained. This function tracks all information systems projects from inception to deployment through all stages.

Metrics must be developed to assure that projects initiated are completed within the planned time and according to budget. The metrics will provide evidence of the effectiveness of IT in meeting its mission, goals and objectives with respect to the deployment of Citywide technology.

To assist in the Project Management function we recommend that the IT Department invest in MS Project Professional. MS Project will assist the project managers Citywide in managing the individual project then posting to a master project greatly enhancing the capability of what is being done.

6.2.2 Missing Standard, Uniform and Searchable Documentation

While IT asset inventories do exist along with other documentation stored in many locations and forms, the IT Department is aware that formalized structured documentation is lacking. A uniform, standard and searchable method of documentation is critical in any operation. Uniform, standard and searchable documentation has a direct impact on the ability to maintain, support, and migrate to new applications. In addition; uniform, standard and searchable documentation is necessary to maintain an appropriate level of application and system security. A uniform, standard and searchable documented system is also necessary to provide for the recovery of systems in the event of a failure or other emergency.

6.2.3 Service-Level Agreements and Metrics

The Application Owner must be accountable for the specific application within the City of El Paso regardless of where the underpinning technology components, processes or professional capabilities exist. The IT Department must be held accountable for its responsibility for the application availability, integrity and confidentiality. Therefore, it will be important to develop metrics to formally measure IT Department performance in providing applications availability, integrity, and confidentiality.

- Availability –
Systems and network provide adequate capacity in order to perform in a predictable manner with an acceptable level of performance of that agreed to in the SLA with the user departments. The systems and network should be able to recover from disruptions in a secure manner in a timeframe agreed to in the SLA with the user departments.
- Integrity –
Systems and network provide assurance of accuracy and reliability of the information. Any unauthorized modification to systems and data are prevented. Hardware, software, and communication mechanisms work in concert to maintain and process data correctly and move data to intended destinations without unexpected alteration.
- Confidentiality –
Data produced by systems is protected from unauthorized disclosure by a level of security enforced at each juncture of data processing. Data is protected while it resides on systems and devices within the network, while it is transmitted, and once it reaches its intended destination.

The use of metrics and formally measuring performance seeks to move beyond uncertainty and doubt to a framework in which the enterprise can quantify the likelihood of performance and weigh the costs of service against expected effectiveness.

6.2.4 Funding Transparency – Technology Refresh and Planning

The budget for the Information Technology Department is derived from the City's General Fund. The Information Technology Department budgets annually for:

- Personnel services both regular/temporary
- Contractual services (note that the vast majority of it staff positions are currently under contract)
- Materials and supplies
- Operating expenditures
- Non-operating/intergovernmental expenses
- Internal transfers
- Capital outlay (for equipment to be used within the Information Technology Department)

Funding for IT related initiatives within the City's individual operating departments is derived from individual departmental capital budgets, and/or departmentally obtained grants. Individual operating department IT funding does not pass to the Information Technology Department. However, funding for individual department information technology asset refreshes (i.e. replacements of: old computers, communications equipment, data storage devices ...) and the maintenance for both hardware and software, is the responsibility of the Information Technology Department.

The issues presented by this model include:

- Lack of control by the Information Technology Department over the planning and anticipation for the refresh cycle for IT asset obsolescence
- Lack of coordination resulting in inefficient use of City information technology assets between the individual departments (silo affect)
- Training concerns where the Information Technology Department has minimal ability to support the information technology assets
- Lack of communication between the operating departments and the Information Technology Department. This creates the potential for funding issues and constraints with respect to maintenance of systems for which the Information Technology Department is unaware.

6.2.5 Information Technology Trainers do not Exist within the City Organization

We identified the need for an Information Technology training program within the City administrative organization. It is important to note in the surveys as well as the interviews performed as part of the project, several operating departments made comments supporting the need for an organization-wide IT training program. Below are sample comments made regarding the need for organization-wide IT training:

- “Microsoft training is good but we need more”
- “Not enough space available when training is offered”
- “No training available”
- “More training for department specific software is needed”
- “The frequency of classes for the amount of employees is ridiculously low”

While the ownership of IT training can be argued as originating from either the Human Resources Department or the IT Department, the ownership is secondary to the fact that for the most part IT training is limited internally. A formal IT Training program must be created to address all of the IT training needs of the City. The training program should include but not be limited to:

- Application training related departmental applications, and those that cross department barriers
- GIS related training for the various installations and uses of GIS
- Information technology security related training (and appropriate refresh training on an annual basis)
- IT Policy Training (Acceptable Use, Virus Protection, Identity Protection, Etc.)
- Global Microsoft product training

6.3 Management and Organization

6.3.1 Centralized Versus Decentralized Structure

The City of El Paso uses a hybrid approach to the management of IT operations. The City manages and operates technologies centrally from its City Hall location with some IT support staff existing in the individual departments.

The centralized structured services provided by the IT department include:

- Telecomm including voice and data
- Application support and maintenance
- Database management
- Server support and maintenance
- Application development and integration
- Desktop support and maintenance

The decentralized IT services support:

- Specialized applications focusing on the individual departments needs
- Specialized hardware focusing on the individual departments needs
- Desktop support for the individual departments where determined necessary

In this environment, it is important that IT resources including staffing, hardware, communications, strategic use of contractors, and software be appropriately designed and planned. This is necessary to maximize the support structure for the City as a whole. This includes but is not limited to evaluating the City of El Paso's IT staffing deployment in terms of:

- Geographic positioning
- Skill sets and areas of expertise
- Organizational positioning
- Schedule and coverage availability

While the Business Analyst function is intended to support the departments and operating functions within the City environment; the Business Analyst function should also be utilized to assist in the evaluation of the best deployment of IT staffing resources, and expertise throughout the City.

The hybrid approach to IT where IT communications and management are centralized, and support is both centralized and decentralized, appears to work for the City of El Paso. This is due to the City's size, user department needs, and the close proximity from one location to another. In addition, there is a significant similarity of user department technology between most departments.

6.3.2 Leadership and Management

Technology leadership within the City of El Paso has been provided centrally by the City of El Paso's CIO. The SWOT analysis shows this model is working well and should not change. In general, department managers, directors, City Council, and IT board members feel that the CIO's vision and objectives are consistent with their needs and the general needs of the City of El Paso and its citizens and stakeholders. Other analysis and discussions indicated that generally, the focus of management has been on attempting to move the City of El Paso to an appropriate level of technology commensurate with the needs of its stakeholders, departments, management, and the public. This focus has taken place while maintaining the IT operations to allow current operations to function.

From a project management standpoint, the City of El Paso does lack comprehensive resources to ensure that successful outcomes are always achieved. Currently, personnel levels only allow them to attend to core activities, including managing tasks, schedules, and deliverables. Since there are no project managers to address the current needs and basics, more sophisticated projects will likely fail due to resource limitations.

6.3.3 Staffing

Staffing levels within the City of El Paso IT Department appear to be lower than optimal, however, that does not include additional staffing required based on environmental issues. The current Organizational Chart has sixty-three (63) positions defined (note that only 57 positions are filled).

We used one of the most often cited calculations to compute appropriate IT staffing levels. The formula comes from Project Athena which was a project at the Massachusetts Institute of Technology (MIT) implemented in cooperation with IBM and Digital Equipment Corporation. It was launched in 1983 and ended in 1991. The model was updated by Merit Networks in late 2000 and is still considered valid today.

According to the calculation of staffing needed, there is a requirement of seventy-seven (77) positions in the Information Technology Department. Because of environmental issues; priorities, number of buildings, geographic area, age of equipment, and age of applications, there is an increased need if equipment is not refreshed and software is not brought up-to-date of one-hundred eight (108) positions. However, the one-hundred eight (108) positions would be at the high-end with a fully implemented infrastructure, only if equipment is not kept refreshed and applications are not kept current. Under the proposed plan with the appropriate refresh cycles, a staffing complement of seventy-seven (77) positions would be optimal.

Based on the analysis presented in Exhibit C and the SWOT analysis performed the following table summarizes where the staffing increases should occur.

Classification	Existing Number of Staff	Number of Staff Needed	Net Increase in Staff By Classification
Administrative	1	1	-
Business Analyst	-	4	4
CIO	1	1	-
Civil Service/Admin/Secretarial	3	3	-
Database Administrator	1	2	1
Database Analysts	2	3	1
Document Imaging	2	3	1
GIS Manager - Part Time	1	1	-
GIS Specialist	3	4	1
Information Services Manager	1	1	-
Network Admin	6	9	3
Network Systems Manager	1	2	1
PC LAN Specialist	17	19	2
PC LAN Supervisor	1	2	1
Programmer Analyst	6	7	1
Programming Supervisor	1	1	-
Telecomm Manager	1	1	-
Telecomm Specialist	6	8	2
Web Programmer	3	5	2
Total	57	77	20

Currently the Information Technology support staff is on call 24 x 7 for immediate service needs. With the implementation of additional real-time systems and WEB capabilities it will become necessary to provide on-site 24x7 support for critical functions. Results from the strategic planning process identified some need to expand the helpdesk on-site services outside the normal working business hours for the City.

Current IT staffing is capable of handling project management for the less sophisticated and less demanding projects occurring day-to-day within the IT Department. However, as the implementation of larger scale more complex projects with multiple priorities, project management will need to be augmented or strategically outsourced to manage these more sophisticated projects.

The staffing increases will allow for the necessary migration to a 24 x 7 supported infrastructure, analysis of the departmental IT needs, efficient use of IT by the City (less data silos), web based applications, broader bandwidth, and the additional support demanded by users of GIS.

6.3.4 Business Analysis

The City of El Paso does not regularly or routinely perform business analysis processes. Business analysis involves evaluating business processes, requirements definition, modeling, design, and reviewing alternatives. The methodologies used include assessing and improving existing processes, matching processes with automated systems, and improving the design and selection of computer systems. Other important components of business analysis include cost/benefit analysis, market assessment, prioritization, and understanding end-user needs. Because proper analysis has not been completed, projects have sometimes stalled or resulted in an inappropriate outcome.

The importance of conducting proper business analysis should be considered significant. Business analysis directly impacts the way business within the City of El Paso functional departments is conducted. The lack of business analysis contributed heavily to the past failure and stalling of implementations, and if not directly addressed, will significantly impact future projects and increase the potential risks within those projects. Business analysis will be a very important factor in assisting the City of El Paso to move forward with all of the departmental requests for additional functionality on the WEB and the need for newer more modern applications.

6.3.5 Telecommunications

Telecommunications management includes overseeing the functions associated with delivering voice and data telecommunications services.

The voice services managed by the IT department consist of a voice system connected to the Avaya switch in the basement via the wiring closets on the floors. This is by design because the wiring closets don't have generator backup. Currently not all City employees can be assigned voicemail boxes. This is due to existing voicemail system limitations. Only 1,000 voicemail boxes are allowed. The City estimates there is a shortage of 2,111 voicemail boxes within the City employee base.

The data services managed by the IT Department include the management of The City of El Paso's routing and switching equipment across its many telecom lines ranging from fiber to dial-up to over one hundred forty-five (145) locations throughout the City of El Paso. Additionally, telecomm management includes the DS3 connection to the Internet from the city hall location.

The IT Department has the responsibility for managing these Telecommunications networks and providing connectivity services to the desktop. Management and technical support has been handled by internal staff. There is currently an after hours phone number that can be called to provide connectivity support on a 24 x 7 basis.

Telecomm support personnel within The City of El Paso are covered by internal staff. There is currently an after hours phone number that can be called to provide support on a 24 x 7 basis.

6.3.6 Organization Structure

The City of El Paso's IT Department is a centralized technical service group, with Sixty-Three (63) staff positions defined in the organizational chart. The IT staff is divided into three (3) Divisions:

- Information Services Division
 - Technical Support
 - Network Support
 - Database Administration
 - Application Support
- Geographical Information Services(GIS) Division
- Telecom Division

During the planning process, significant feedback was obtained from end-users related to their dealings with the IT Department. The feedback is considered important because it affects the relationship between the functional departments and also impacts the level of business that may be conducted in the future. Several IT Department issues require further attention, including:

- Lack of business analysis
- Project management
- Hours of support for telecomm and systems
- Ability to support systems in a timely manor

While centralization works well the IT staff must be augmented, trained, or redeployed to address the missing skill sets.

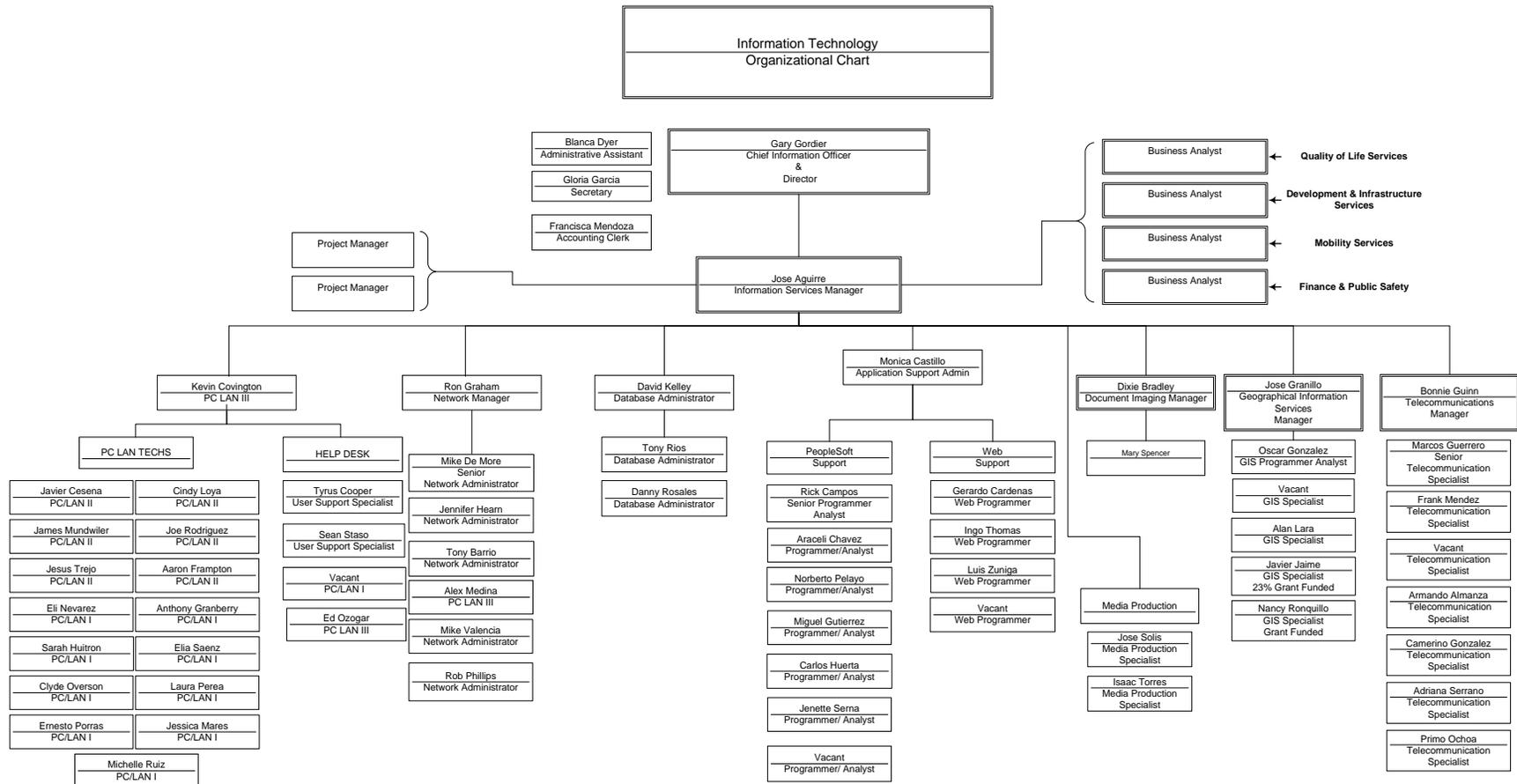
Based on the analysis performed the IT Department structure should be altered as follows:

- A Business Analyst would be assigned to each of the City's four (4) operating portfolios. Each of the Business Analysts would have overall responsibility for their operating portfolios IT needs and services. All Business Analysts would report, and take direction directly to and from, the Information Services Manager.
- The GIS Manager would be moved from a part-time to a full-time position and report to the Information Services Manager.
- Telecommunications, Document Imaging and Media Production technical support would be moved under the direction of the Information Services Manager. This move will free-up the CIO from the day-to-day IT tactical operations.

The overall affect of these changes will be three fold:

1. The IT services provided to the City's operating departments will be uniform since IT management will be driven by the City's IT tactical Information Services Manager.
2. Each department will have advocacy for their IT service needs. Advocacy will be vested with an individual capable of understanding the department's business automation needs, and reporting at a level to accomplish the tactical service needed.
3. The CIO will have the availability to work at the IT strategic level in assuring that:
 - The City's IT assets do not fall behind technology advances
 - The needs of the stakeholders are being met

A revised organization chart is presented below based on the recommendations above.



6.4 Funding

The focus on information technology funding has to be divided into its functional areas:

- IT Departmental Related:
 - Staffing including salaries, contractor costs, and benefits
 - Supplies including office supplies and consumable costs i.e. backup tapes ...
 - Technology training for IT staff keeping them current on the information assets in use by the City
 - Operating expenses i.e. internet connectivity, T1 line costs, connectivity to the County and State...
- Citywide IT Capital Related
 - Implementation of communications and telecomm infrastructure upgrades, i.e. conversion to fiber connectivity between City buildings, replacement of switches, routers, telephone switches, POE24 and other communications infrastructure components.
 - Additional data storage infrastructure for the ever increasing data storage needs of the City. Storage capacity relates to the future departmental needs and demands. As the departments advance and further automate their services to the public, their storage demands will increase.
 - Refresh/upgrade needs of computing assets as they age, i.e. desktop and laptop computers, servers, data storage devices, communications equipment, application software, operating system software and other computing assets.
 - Cost of environmentally appropriate server room/datacenter facilities.

The City of El Paso's IT Department needs adequate funding to properly provide for the Citywide IT capital related technology. The initial cost of the Departmental IT Capital expenditures appears in the individual departmental budgets. However, the refresh and maintenance costs must appear in the IT Department budget, but acquisition of assets requiring refresh and maintenance by the Departments has not always been transparent to the IT Department. In addition, the Citywide IT Capital improvements, i.e. telecomm infrastructure upgrades, conversion to fiber connectivity between City buildings... has not always been appropriately presented and planned. Therefore, technology capital budgeting at the City of El Paso is considered to be a significant weakness.

The issues presented by this model include:

- Lack of control by the Information Technology Department over the planning and anticipation for the refresh cycle for IT asset obsolescence
- Inability to plan for future communication infrastructure needs and demands
- Inefficient use of City information technology assets between the individual departments (silo affect)
- Training concerns where the Information Technology Department has minimal ability to support the information technology assets

²⁴ Power over Ethernet (POE) is defined as the transmitting of DC power to the target device at the end of an Ethernet cable by carrying power in the unused 4/5 and 7/8 wires.

- Lack of communication between the operating departments and the Information Technology Department. This creates the potential for funding issues and constraints with respect to maintenance on systems for which the Information Technology Department is unaware of.

We recommend that the City implement and enforce an IT asset acquisition policy and formalize the communication between the operating departments and the IT Department for all IT asset purchases planned. We further recommend that the IT Department formalize a capital budgeting plan incorporating the IT asset acquisition policy, thereby assuring appropriate budgeting for staff training, asset maintenance and refresh cycles.

SECTION SEVEN
Strategies

7.0 STRATEGIES

Our analysis discovered that in the last two years, IT Management has observed a requirement for the City of El Paso's application environment to shift toward providing more Web-based applications to internal and external clients. Discussions with individual department management supports IT Management's observations.

Therefore, the City of El Paso's applications must evolve to make use of a Web-based²⁵ Graphical User Interface²⁶ (GUI) consistent with both the desires of management and in general the IT industry direction. This will involve the incorporation of additional hardware and software while preserving the City of El Paso's investment in their present systems, including the existing data, knowledge base, operating requirements and other factors that can and should be leveraged in the transition.

In support of this, a key objective must be to realign the support capabilities within the IT Department to allow for:

- A Business Analyst function in each of the City's Portfolios to assist in business process re-engineering if and where needed, application definition, and business process documentation.
- 24 x 7 support of both applications and infrastructure; sustaining information availability, thereby assuring both internal and external user access to information when and wherever needed.
- Uniform, standard and searchable documentation to provide for the ability to support both applications and infrastructure; sustaining information availability, thereby assuring both internal and external users access to information when and wherever needed
- Application ownership in user departments
- Implementation of a Change Control Board (CCB) to assist in making decisions regarding whether or not proposed changes to software, hardware, etc. should be implemented. The change control board is constituted of portfolio management or their representatives.
- Implementation of an IT Liaison (Steering) Committee to provide feedback to Information Technology as to the effectiveness of current IT technologies, procedures, and service levels. Additionally, the Committee may advise the Information Technology Department regarding specific improvements that should be considered to increase the effectiveness or impact of Information Technology in operational departments, evaluate the Information Technology Strategic Plan, and ensure projects or acquisitions are prioritized appropriately.

²⁵ A web-based application refers to the use of Web browsers and applets. Retrieving a Web page causes the execution of code in the Web server as well as code in the web page brought into the user's machine. Using a web-based application causes the applet to be downloaded and executed in the user's machine rather than loading and using a local application.

²⁶ A Graphical User Interface or GUI is an interface for issuing commands to a computer utilizing a pointing device, such as a mouse, that manipulates and activates the graphical images seen on the monitor.

7.1 Overall Strategic Goal

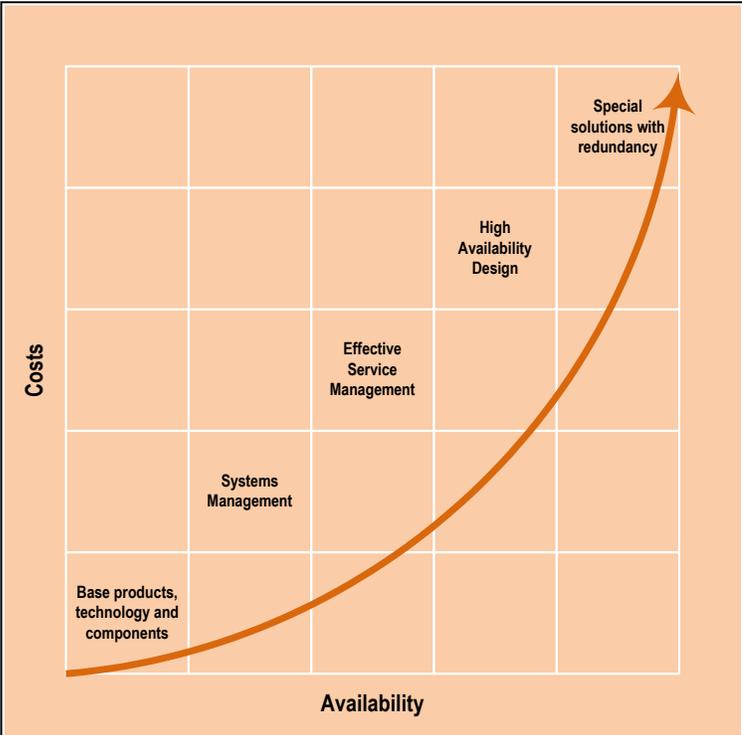
The City of El Paso's resulting IT environment must include the following components:

- Contemporary technologies throughout the City of El Paso.
These contemporary technologies should provide flexible, robust and supportive systems with equally flexible, robust and supportive technical environments. These must include:
 - Adequate bandwidth between City business locations
 - Appropriate telecomm systems to support the City's business functions
 - Suitable facilities with appropriate environmental controls to house the City's critical computing assets
- Systems that provide for integration through middleware if and when both possible and practical.
These systems should allow business area functions to be consolidated through data communications when and wherever possible. This strategy can result in the minimizing of the currently disparate, stand-alone and unshared information. The end result will be the reduction in duplicative efforts and lack of information sharing throughout the City of El Paso. In addition, this will also minimize the potential for data entry errors and inaccuracies. The IT Department must be:
 - Adequately prepared to support these systems with appropriate talent and training
 - Appropriately budgeted to maintain these systems going forward
- A 24 x 7 supported IT environment.
24 x 7 support will be necessary for new applications and systems. The new applications will most definitely include internally hosted Web services. Access to the new Web based services and applications can and will fall outside of the normal business hours by the City management, staff, stakeholders, and the public. The IT Department must be:
 - Appropriately budgeted to staff a support infrastructure 24 x 7
 - Properly staffed to provide support 24 x 7
- Integrated, user-friendly and graphical user interface (GUI)-based systems.
New systems will make use of the more intuitive GUI, and include updated modern business processes and defined workflows providing easy-to-use and navigate systems. This will allow the City management, staff, and citizen's proactive access to easily available information and reports. The City's IT infrastructure must have:
 - Adequate communications capacity to support GUI applications
 - Sufficient storage capacity to support GUI applications
 - Ample computing capacity (at the desktop) to support GUI applications
 - Enough staffing to develop and maintain GUI applications
- Use Outsourcing Strategically
At the strategic level, outsourcing allows not only the transfer of control to the contractor, but also the method of obtaining technical resources not otherwise available. Strategic outsourcing makes sense for the City of El Paso as the ability to source the technical skill needed to support existing applications, future systems and the migration to future systems. In addition the hours of operation as well as the technical skill can speed up delivery while focusing on core business needs.

7.2 Service Delivery

The level of availability required by the City of El Paso will influence the overall cost of the IT service provided. In general, the higher the level of availability required by an organization, the higher the cost. These costs are not just the procurement of the IT technology and services required, additional costs are incurred in providing the appropriate service management processes, staffing and technical resources, systems management tools and high-availability solutions required to meet the more stringent availability requirements.

Due to the need for 24 x 7 availability for the City’s internal and external customers, it is important to ensure that the level of availability to be provided for an IT service is at the level actually required, and is affordable and cost justifiable. This diagram provides a graphical indication of the products and processes required to provide varying levels of availability and the associated cost implications.



Due to the need for 24 x 7 availability for the City’s internal and external customers, it is important to ensure that the level of availability to be provided for an IT service is at the level actually required, and is affordable and cost justifiable. This diagram provides a graphical indication of the products and processes required to provide varying levels of availability and the associated cost implications.

7.2.1 Need for Internal Service-Level Agreements

While the City of El Paso does not typically formalization internal agreements between operating departments, similar local governments opt to include formalized agreements between the IT Department and the operating departments and divisions.

Service-level agreements (SLAs) are contracts that document what services are to be provided from technology personnel to end-user customers. To support the acceptance of the Application Ownership model it is necessary for both the end-user Departments and the IT Department to negotiate SLAs for the applications. The Application Owner will then be accountable for the specific application within an organization regardless of where the underpinning technology components, processes or professional capabilities reside. The IT Department will be responsible for the application availability, integrity and confidentiality.

If properly formalized and implemented SLAs can be used to:

- Provide the ability to measure the IT Department’s success in supporting the functioning user departments
- Assure the proper support and processes for successful application implementations
- Guarantee the proper support and processes for successful computing infrastructure implementations
- Assist in the functioning user department satisfaction with the support received from the IT Department

7.3 Architecture

Six (6) architecture strategies have been developed as part of the strategic plan. Architecture strategies address implementation and deployment of Web-based, integrated, and infrastructure technologies. Related to architecture strategy development, particular areas of concern include the following:

- General enhancements of hardware and software
- Principles of use
- Standardized technologies and infrastructure:
 - Database standardization
 - GUI standards based
- New telephone systems
- COTS Based Strategy
- Design and implement a common architecture

7.3.1 General Enhancements of Hardware and Software

All application and IT equipment acquisitions must enhance efficiency and effectively implement programs that support the City of El Paso's mission, vision and objectives. Computer hardware and system solutions are a primary vehicle for meeting this requirement. However, there are disciplines and rules that should govern the acquisition of these systems. Many implementations fail to produce the benefits predicted at the initiation of a project. Oversight of system acquisitions must be vested with executive management and the IT Liaison (Steering) Committee to enhance the cost-effective and timely expenditure of funds for computer systems. This policy exercises that oversight by instituting evaluation criteria when a project is initiated or before implementation. If these crucial factors are considered, the possibilities of a successful project are increased significantly.

7.3.2 Principles for Use

The principal customers for the product or service provided by the acquired systems are stakeholders, management, staff and where Web applications are used the citizens of the City of El Paso. To provide the best opportunity for success in selection, acquisition, and implementation of systems the following list, although not all-inclusive, should be the criteria used to evaluate proposed systems.

1. The system must be responsive and adaptive to customer needs, concerns, and feedback.
2. Does the system respond to the need for information sharing across the City of El Paso. Departments do not exist in a vacuum; they are part of the City of El Paso with common needs supporting its citizens.
3. Investments in major information systems proposed for funding should:
 - Support core/priority mission functions that need to be performed by the City of El Paso;
 - Be undertaken by the requesting department because no alternative source can support the functionality more efficiently;
 - Support work processes that have been simplified or otherwise redesigned to reduce costs, improve effectiveness, and make maximum use of commercial, off-the-shelf (COTS) technology;

- Demonstrate a projected return on the investment that is clearly equal to or better than alternative uses of available resources. This may include but not be limited to:
 - improved mission performance;
 - reduced cost;
 - increased quality, speed, or flexibility; and
 - increased customer and employee satisfaction.

The projected return should be adjusted for such risk factors as the project's technical complexity, the department's management capacity, the likelihood of cost overruns, and the consequences of under- or non-performance.

4. For information technology investments, be consistent with the City of El Paso or the department's:
 - Work processes and information flows with technology to align the individual department's strategic goals with the City of El Paso's strategic goals and vision;
 - Use standards that enable information exchange and resource sharing, while retaining flexibility in the choice of suppliers and in the design of work processes.
5. Investments in major information systems should reduce risk by:
 - Avoiding or isolating custom-designed components to minimize the potential adverse consequences on the overall project;
 - Use fully tested pilots, simulations, or prototype implementations when necessary before going to production;
 - Establish clear measures and accountability for project progress; and
 - Secure substantial involvement and buy-in throughout the project from management and users who will use the system.
6. System modernization or investments should be implemented in phased, successive segments as narrow in scope and brief in duration as practicable. Each segment solves a specific part of an overall mission problem and delivers a measurable net benefit independent of future segments. A comprehensive, non segmented implementation only occurs if it can be demonstrated that there are significant economies of scale at acceptable risk from funding more than one segment or there are multiple units that need to be acquired at the same time.
7. Employ an acquisition strategy that appropriately allocates risk between the City of El Paso and the contractor, effectively uses competition, ties contract payments to accomplishments, and takes maximum advantage of commercial technology.
8. Have a clear view of the existing processes that are subject to automation and a well-conceived view of the resulting flow of work and the staff that will support the system.
9. Include systematic interfaces to the appropriate core systems if the system processes information that impacts core city data and the City of El Paso's financial systems.
10. Employ a solution to the documented business problem that is both appropriate and effective.

7.3.3 Standardizing Technologies and Infrastructure

In order to minimize the cost associated with the support of any infrastructure it is important to maintain as much consistency among IT assets as much as possible. This will allow for the training and leveraging of knowledge across the City IT support staff. This includes but is not limited to hardware, application software, monitoring software, printers, etc.

IT standardization evolves in levels, with each successive level opens the door for new users, triggering new technology refinements, declining costs, and setting the stage for the next level of standardization. Return on investment (ROI) associated with the use of standardization increases with each new level of standardization.

Standardization is an inevitable development in the IT industry. Standardized technology has driven the speed of innovation, the acceptance of new applications, and the rapid expansion of the server and storage markets over the past few years. Standardization enables the City to drive costs lower in other areas, including deployment, operations, software, and services.

Currently the city has adopted CISCO as a standard for the infrastructure and Dell as the standard for the desk top and server environments. We concur with this decision since both Cisco and Dell have both become de facto standards in their individual environments.

Product standardization enables predictable, repeatable datacenter processes. It provides increased availability, data integrity, and data confidentiality services provided to the City of El Paso.

Use of Open Source Applications

There has been some discussion within the City of moving to Open Source²⁷ applications. There are both pros and cons to the Open Source vs. Closed Source (i.e. Microsoft, Adobe, Novell ...) debate.

One source of conflict is purely economic; this is since investments in Open Source applications are typically zero, as licensing exists in the public domain. The counter to this argument is the use of Open Source software in many cases fuels a secondary unverified support and service market. This is since providing support, installation services and maintenance relies on the unlicensed, and in some cases uncensored Open Source community. In some cases, support can be very costly, or may not be readily available in some geographic regions.

A major objection to Open Source application use in the business community is a result of potential defects and security flaws. While potential defects and security flaws are easily found within the Open Source community, they are also easily implemented without testing by the Open Source community. This is in contrast to the Closed Source argument that change control within the commercial sector can and in many cases does prevent malicious code and malicious persons from deploying applications with weak security and other flaws. This argument is enhanced when one considers that there is no financial incentive for Open Source applications to be patched and fixed, but there is a major financial incentive for Closed Source applications to be patched and fixed.

²⁷ Open source software is defined as computer software for which the source code and certain other rights normally reserved for copyright holders are provided under a software license that resides in the public domain.

We do not recommend that the City move to Open Source applications. This recommendation is due to the single factor of security. Open Source applications may allow hackers to know about the weaknesses or loopholes of the software more easily than Closed Source applications. This results from the fact that Open Source applications can be tested by hackers with impunity then used against the City once a hole is found.

7.3.4 COTS Based Strategy

The term COTS Package is defined on the basis of the 'Federal Acquisition Regulations'. It is defined as something that one can buy, ready-made, from some virtual store shelf. It provides a sense of value in getting a product at a reasonable cost where the development has already been performed. The main characteristics of COTS are it:

1. Was derived by a process of reasoning without reference to a particular organization
2. Is available to the general business community/public
3. Can be purchased, leased or licensed

The meaning of the term "commercial" is a product customarily used for general purposes and has been sold, leased, or licensed to the general public. As for the term "off-the-shelf", it means that the item is not to be developed by the user, but already exists.

A comparison of both pros and cons can be done comparing COTS to self-developed systems.

COTS Systems	
Pro	Con
Best practices built in	Customization makes upgrades and fixes difficult to implement unless handled carefully
Use of the functionality can grow with the department without additional systems development	Source code may or may not be available so care will need to be taken to assure that the COTS provide source code
If the COTS allows for application programming interface (API) calls using API will make customizing COTS easier for maintenance and future upgrade	No longer a COTS if the source code is modified internally. In many cases there will be no vendor support for modified COTS
COTS can allow systems to be built with pre-existing software to reduce development and maintenance costs	Will need to assure that the COTS can be tailored or extended using tailoring options
Implementing COTS will involve less development time and lower development cost by taking advantage of existing, market proven, and vendor supported products	Future releases may cause maintenance issues if the COTS application is customized
COTS are available quickly and the organization can realize an earlier payback	Older versions of the COTS eventually become obsolete just due to time. This can be an issue if the application is heavily customized.

COTS Systems	
Pro	Con
COTS will avoid expensive development and maintenance (note that this must be tempered by the customization and integration)	The COTS evolution will not be under the control of the City of El Paso, it is vested with the COTS vendor
COTS license costs & performance computation are typically predictable based on market analysis	While development time can be reduced, it is often at the cost of increased software component integration work and costs
COTS are typically rich in proven functionality	COTS will always have up-front license fees and in some cases depending on negotiations with the vendor licensing and procurement delays
COTS can and frequently are broadly used and possess a mature technology	COTS usually (if not always) have recurring maintenance fees attached to them
Both a pro and a con is that COTS frequent upgrades may and in some cases will anticipate organization's needs	In some cases COTS will contain unnecessary features that may compromise usability, performance
COTS will maintain a dedicated support organization	Both a pro and a con is that COTS frequent upgrades may and in some cases will anticipate organization's needs
COTS organization frequently track technology trends and adjust accordingly	When using COTS there will be no control over upgrades/maintenance releases

To minimize the risk of a COTS implementation the following elements should be considered:

- All COTS should use the same backend database
- Source code should be obtained if possible
- Modifications should be avoided if possible. If needed, changes should not be made to existing source code but by way of outside programs.
- Vendors should be required to escrow source code if the source code will not be provided
- Other items to mitigate the "Cons"

7.3.5 New Telephone Systems

An opportunity identified by the SWOT included a newer more advanced telephone system to assist in updating the capabilities of the City of El Paso. A new phone system will allow for modern integration between telecomm and the City of El Paso's application data (Call Center management). Call Center management will provide the City of El Paso the power to organize its telecom asset inventory, and optimize its telecom network, using modern web-based solutions. In addition, features available once the system has been replaced include but are not limited to:

- Contact management
- CRM integration
- Customizable fields
- Customizable functionality
- Customizable reporting
- Data import/export
- Outbound reporting
- Additional Voicemail capabilities

It is important to note that there are infrastructure concerns that need to be addressed prior to the implementation of the technology used in a VoIP phone solution. This includes the updating of infrastructure to include Quality of Service (QOS²⁸) and POE as well as increased bandwidth and power to the remote locations.

7.3.6 Design and Implement a Common Architecture

Where possible, the City of El Paso should make use of common data elements. Paperwork moves by the thousands of pages while records pass from department to department. Neither the technologies nor the processes used to support departments within the City of El Paso are standard. Much of the technology resides in disparate systems.

The current level of workflow between departments is cumbersome and inflexible, and it is clear that future efforts need to focus on streamlining information and data flow.

A more viable option is to implement integrated workflow through a well-designed multidepartment system. This may be accomplished by streamlining workflows; improving data management; and implementing simple, standardized, and integrated functionality. This approach will effectively establish links between departments aligning data, personnel, and information processing. Along the way, it is assumed that fewer documents will be produced as more data is managed in an automated, rather than manual format.

²⁸ Quality of Service (QOS) is defined as a measure of performance in a data communications system. For example, to ensure that real-time voice and video are delivered without annoying blips, a traffic contract is negotiated between the customer and network provider that guarantees a minimum bandwidth along with the maximum delay that can be tolerated in milliseconds.

SECTION EIGHT
Strategic Phasing

8.0 STRATEGIC PHASING AND BUDGET REQUIREMENTS

8.1 Strategic Phasing

The strategies developed during the planning process cover a wide territory. Strategies have been developed in four major functional areas:

- A. - Management and Organization
- B. - Service Delivery
- C. - Operations
- D. - Architecture

The strategies were first introduced in the Executive Summary embedded within the guiding principles. The strategies are discussed below in terms of timing and then in detail in the following sections by functional areas.

The City of El Paso’s IT plan is structured into three phases.

Phase One: Establish a proper management and IT foundation for subsequent growth, enhancement, implementation processes and needed service.

Phase Two: Deploy more efficient technologies and/or make better use of existing IT assets to increase productivity. In addition, this phase addresses the need for a critical new infrastructure prioritized in terms of the value to be delivered to end-users.

Phase Three: Deploy major and complex technologies that will move the City of El Paso forward (full modernization). This phase will initiate as work is underway for Phases One and Two, but will progress in an incremental and phased manner to avoid the pitfalls of hasty and poorly planned implementation.

The timing of strategy implementation is important. Some strategies are considered dependent on others and should not be implemented until prior work has been completed. The three phases are depicted in **Strategy Phasing** below along with the timing for each phase.

Legend:

Planning (if relevant)	Implementation	Ongoing (if relevant) →
-----------------------------------	-----------------------	-----------------------------------

Strategy Phasing

Phase/Strategy		Year			
		1	2	3	4 (and beyond if relevant)
Phase One – Management and Service					
A1.	Augment the staff in each of the City’s individual portfolios with the addition of a Senior Business Analyst function reporting back to the Information Technology Manager. Evaluate and add Business Analysts in each of the portfolios as needed.				

Phase/Strategy		Year			
		1	2	3	4 (and beyond if relevant)
A2.	Augment the IT Department Staff with the staff necessary to provide the project management and support required by the user departments along with the necessary support required by the modernization effort.		→		
A3.	Create a Change Control Board (CCB) to make decisions regarding whether or not proposed changes to a software project should be implemented. The change control board is constituted of Portfolio management or their representatives.				
A4.	Create an IT Liaison (Steering) to provide feedback to Information Technology as to the effectiveness of current IT technologies, procedures, and service levels. Additionally, the Committee may advise Information Technology regarding specific improvements that should be considered to increase the effectiveness or impact of Information Technology in operational departments, evaluate the Information Technology Strategic Plan, and ensure projects or acquisitions are prioritized appropriately.				
A5.	Begin a large scale documentation project to assure all systems (both infrastructure and software) are appropriately and consistently documented in anticipation of future migration plans. This will include the development of documentation standards for all software and hardware. Once documentation standards are developed and implemented, the documentation should be placed in a form where it is searchable by all authorized staff.		→		
A6.	Secure funding for future projects including infrastructure enhancements including the ever increasing demand for storage capacity, and the refresh of all infrastructure, peripheral, and desktop equipment.		→		
A7.	Plan, implement, and secure funding for the update of connectivity (Fiber) and power to all locations.		→		

Phase/Strategy		Year			
		1	2	3	4 (and beyond if relevant)
A8.	Develop SLAs with user departments including measurement metrics.				
A9.	Construct a method of providing transparency between the acquisition of IT Assets at the Departmental level and the budgeting for maintenance and refresh at the IT Department level.	→			
Phase Two – Efficient Technologies					
B1.	Eliminate single points of failure within the infrastructure.		→		
B2.	Analyze and document business processes in functional departments.		→		
B3.	Re-engineer/develop plans for re-engineering in functional departments where needed.			→	
B4.	Re-implement/implement underutilized applications to improve efficiencies within the functional departments and across the enterprise.		→		
Phase Three – Full Modernization					
C1.	Acquire and migrate to a datacenter with appropriate environmental controls. These include but are not limited to: an equipment only room with appropriate gas fire suppression, redundant power, generator power backup, cooling and humidity control, and elimination of water and sewer overhead pipes.		→		
C2.	Merge the Telecom and Information Technology providing support for the transition to VoIP.	→			
C3.	Replace voice systems, adding voicemail capabilities as well as Voice over IP (VoIP)		→		
C4.	Definition and implementation of functionality such as wireless and increased web functionality for all of the portfolios.			→	

8.2 Budget Requirements

The following tables summarize the anticipated budgetary requirements to achieve the strategy presented in this plan. The amounts represent estimates in current dollars as of the date this plan was produced. The dollars presented may change due to economic conditions at the time of expenditure.

8.2.1 Staffing Increases Summary

Classification	Notes Below	Existing Number of Staff	Number of Staff Needed	Net Increase in Staff	Additional Wages – Low Range (-5%)	Median Additional Wages	Additional Wages – High Range (+5%)
Administrative		1	1	-			
Business Analyst	1	-	4	4	\$ 190,000	\$ 200,000	\$ 210,000
CIO		1	1	-			
Civil Service/Admin/Secretarial		3	3	-			
Database Administrator	2, 4	1	2	1	\$ 66,500	\$ 70,000	\$ 73,500
Database Analysts	2, 4	2	3	1	\$ 61,750	\$ 65,000	\$ 68,250
Document Imaging	2, 4	2	3	1	\$ 42,750	\$ 45,000	\$ 47,250
GIS Manager - Part-Time		1	-	(1)	\$ (33,250)	\$ (35,000)	\$ (36,750)
GIS Manager - Full-Time	3, 4	-	1	1	\$ 66,500	\$ 70,000	\$ 73,500
GIS Specialist		3	3	-			
Information Services Manager		1	1	-			
Network Admin	4	6	8	2	\$ 114,000	\$ 120,000	\$ 126,000
Network Systems Manager	4	1	2	1	\$ 66,500	\$ 70,000	\$ 73,500
PC LAN Specialist	4	17	19	2	\$ 104,500	\$ 110,000	\$ 115,500
PC LAN Supervisor	4	1	2	1	\$ 57,000	\$ 60,000	\$ 63,000
Programmer Analyst	2, 4	6	7	1	\$ 42,750	\$ 45,000	\$ 47,250
Programming Supervisor		1	1	-			
Project Manager	5	-	2	2	\$ 104,500	\$ 110,000	\$ 115,500
Telecomm Manager		1	1	-			
Telecomm Specialist	4	6	8	2	\$ 85,500	\$ 90,000	\$ 94,500
Web Programmer	4	3	5	2	\$ 85,500	\$ 90,000	\$ 94,500
Total		57	77	20	\$ 1,054,500	\$ 1,110,000	\$ 1,165,500

- 1 To provide for a smooth and effective migration to the modern applications, Business Analysts must act as a liaison among the stakeholders in order to elicit, analyze, communicate, and validate requirements for the changes necessary to business processes, policies and information systems.
- 2 The Business Analysts will also act as a tool to break-down the exiting technology silos within the City's computing infrastructure.
- 3 Additional applications and database development and support will be necessary as the City moves to modernize and update its applications to a user centric and web enabled environment.
- 4 User departments have voiced a need for a higher level of service from GIS. The GIS services should be supported by a full-time manager to assure GIS users the best possible service.
- 5 Staffing levels must be augmented to bring the IT environment to a level of support capability that the users are demanding. In addition, to enable the IT Department to provide a 24 X 7 support environment in light of the current need to move to a user centric web enabled modernized environment.
- 6 A formalized project management team must be in place to assure the modernization effort (projects) will be performed effectively, on time, and on budget. The project management team will also be responsible for the future projects containing application and hardware refresh cycles and modernizations as technology changes.

8.2.2 Staffing Increases Time Phased

Classification	Year				
	1	2	3	4	5 and beyond
Administrative					
Business Analyst	\$ 50,000	\$ 150,000			
CIO					
Civil Service/Admin/Secretarial					
Database Administrator		\$ 70,000			
Database Analysts		\$ 65,000			
Document Imaging		\$ 45,000			
GIS Manager - Part-Time	\$ (35,000)				
GIS Manager - Full-Time	\$ 70,000				
GIS Specialist					
Information Services Manager					
Network Admin		\$ 60,000	\$ 60,000		
Network Systems Manager			\$ 70,000		
PC LAN Specialist	\$ 55,000	\$ 55,000			
PC LAN Supervisor		\$ 60,000			
Programmer Analyst			\$ 45,000		
Programming Supervisor					
Project Manager	\$ 55,000	\$ 55,000			
Telecomm Manager					
Telecomm Specialist			\$ 45,000	\$ 45,000	
Web Programmer			\$ 45,000	\$ 45,000	
Additional Wages – Low Range (-5%)	\$ 185,250	\$ 532,000	\$ 251,750	\$ 85,500	
Median Additional Wages	\$ 195,000	\$ 560,000	\$ 265,000	\$ 90,000	
Additional Wages – High Range (+5%)	\$ 204,750	\$ 588,000	\$ 278,250	\$ 94,500	

8.2.3 Equipment Modernization and Refresh

To achieve the vision set by the plan, the City IT infrastructure must be kept up-to-date. In order to keep the infrastructure up-to-date all equipment must be on a regular refresh cycle. The table below presents planned refresh cycles for the City's IT infrastructure.

ITEM	Refresh Cycle	Quantity	Cost Low Range	Median Cost	Cost High Range	Median Annual Refresh Cost
PC Replacement	3	3,550	\$ 900	\$ 1,000	\$ 1,100	\$ 1,183,000
Monitor Replacement	4	3,600	\$ 200	\$ 300	\$ 400	\$ 270,000
Laptops	3	292	\$ 2,000	\$ 3,400	\$ 4,800	\$ 331,000
Server (1/1) Replacement	4	358	\$ 6,500	\$ 7,500	\$ 8,500	\$ 671,000
Network Switches w/QoS, PoE, including GBICs ²⁹	4	378	\$ 5,500	\$ 5,775	\$ 6,050	\$ 546,000
Network Routers	4	27	\$ 14,500	\$ 15,225	\$ 15,950	\$ 103,000
Printers	4	1,205	\$ 550	\$ 625	\$ 700	\$ 188,000
Scanners (documents)	4	161	\$ 1,100	\$ 1,500	\$ 1,900	\$ 60,000
Backup Tape Drives	4	21	\$ 20,000	\$ 22,500	\$ 25,000	\$ 118,000
UPS units	2	146	\$ 2,000	\$ 2,400	\$ 2,800	\$ 175,000
Storage Area Network	5	2	\$ 250,000	\$ 275,000	\$ 300,000	Not Annual
Network Access Storage	5	3	\$ 185,000	\$ 185,000	\$ 185,000	Not Annual
Firewalls	4	29	\$ 3,500	\$ 3,750	\$ 4,000	Not Annual
Video Broadcast Equipment	3	3	\$ 100,000	\$ 125,000	\$ 150,000	Not Annual
Backbone Connections per site, to include switches, GBICs, and cables	5	29	\$ 20,000	\$ 25,000	\$ 30,000	Not Annual

The table on the following page presents a time phased cost by year of the refresh cycle.

²⁹ GBIC or GigaBit Interface Converters are hardware modules used to attach network devices to fiber-based transmission systems. These are plug-in modules that enable networking devices to be upgraded in the support high bandwidth fiber.

8.2.4 Equipment Modernization and Refresh Time Phased

ITEM	Year				
	1	2	3	4	5 and beyond
PC Replacement	\$1,183,000	\$1,183,000	\$1,183,000	\$1,183,000	\$1,183,000
Monitor Replacement	\$ 270,000	\$ 270,000	\$ 270,000	\$ 270,000	\$ 270,000
Laptops	\$ 331,000	\$ 331,000	\$ 331,000	\$ 331,000	\$ 331,000
Server (1/1) Replacement	\$ 671,000	\$ 671,000	\$ 671,000	\$ 671,000	\$ 671,000
Network Switches w/QoS, PoE, including GBICs	\$ 546,000	\$ 546,000	\$ 546,000	\$ 546,000	\$ 546,000
Network Routers	\$ 103,000	\$ 103,000	\$ 103,000	\$ 103,000	\$ 103,000
Printers	\$ 188,000	\$ 188,000	\$ 188,000	\$ 188,000	\$ 188,000
Scanners (documents)	\$ 60,000	\$ 60,000	\$ 60,000	\$ 60,000	\$ 60,000
Backup Tape Drives	\$ 118,000	\$ 118,000	\$ 118,000	\$ 118,000	\$ 118,000
UPS units	\$ 175,000	\$ 175,000	\$ 175,000	\$ 175,000	\$ 175,000
Storage Area Network					\$ 550,000
Network Access Storage					\$ 555,000
Firewalls				\$ 108,750	
Video Broadcast Equipment			\$ 375,000		
Backbone Connections per site, to include switches, GBICs, and cables	\$ 240,000	\$ 240,000	\$ 245,000		
Median Equipment Refresh Needs	\$3,885,000	\$3,885,000	\$4,265,000	\$3,753,750	\$4,750,000

8.2.5 Summary Budgetary Needs by Year

Note that there are two items where the costs can not currently be estimated. These two items include:

1. The move of the City’s Datacenter (the current computer room in the lower level of City Hall) to an environmentally appropriate location. The costs will depend on the location chosen, the necessary build-out of the currently unknown space, power and HVAC need for the facility chosen, costs for high bandwidth connectivity to other City facilities, and if the facility will be a lease or a purchase.
2. The cost of high bandwidth fiber connectivity to the City locations now under T1, fractional T1 and Dial-up where necessary. The cost will depend on if already exiting fiber can be used, a 3rd party carrier will supply connectivity, or the City will pull their own fiber (construction costs will apply).

In summary the overall budgetary needs exclusive of the two items noted above are presented in the table below.

Component	Year				
	1	2	3	4	5 and After
Median Additional Wages	\$ 195,000	\$ 560,000	\$ 265,000	\$ 90,000	\$ 0
Median Equipment Refresh Needs	\$ 3,885,000	\$ 3,885,000	\$ 4,265,000	\$ 3,753,750	\$ 4,750,000
Total Budgetary Needs at Median	\$ 4,080,000	\$ 4,445,000	\$ 4,530,000	\$ 3,843,750	\$ 4,750,000

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10.0 EXHIBITS

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Exhibit B – Survey Results:

Users Survey Results

City Council Survey Results

IT Board Survey Results

Exhibit C – Staff Calculation

Exhibit D – Business Analyst Job Descriptions

Exhibit E – SWOT Key Questions

Exhibit F – SWOT Analysis

EXHIBIT A - APPLICATION LISTING

Item	Category	Location
Abandoned/Stolen Vehicles	Police Department	
AbleTerm (JIMS)	PD & Courts	City Hall - Server Farm
Accela Wireless	Permits & Inspections Department	
ACT - (Tax Department)	Vehicle Maintenance Department	City Hall - 1st Floor
Active Directory	Enterprise Application	
AD Manager	Enterprise Application	
Addicts		
ADPICS	OMB / Comptrollers	
Aerial Calibrator - Fire		
AgencyWeb/PoliceManager/CourtNotify	PD & Courts	City Hall - Server Farm
AIMS		
AlarmPermits		
Allison Transmission - Fire		
Amber Alert	Police Department	
Application/Cold Extender	PD & Courts	
APT - Fire Inventory Tracking		
ArcGIS	Enterprise Application	City Hall - Server Farm
Audit	Street Department	Meter Shop on Yandell
AutoCAD	Engineering Department	
AutoScale 2000		
AVL	Fire, PD, Sun Metro	City Hall / Sun Metro / PDHQ
Big Brother	Enterprise Application	City Hall - Server Farm
BlackBerry Enterprise Server	Enterprise Application	City Hall - Server Farm
BlueTeam		
BMU	Building Maintenance Department	City Wide
Braun Vista - Fire		
CAMEO	Fire Department	
Cisco Secure ACS v4.1	Enterprise Application	City Hall - Server Farm
CiscoWorks	Enterprise Application	
Citrix	Sun Metro	Sun Metro
CityWorks	Street Department	MSC - Server Room
Comm2020		
Command Zone - Fire		

EXHIBIT A - APPLICATION LISTING

Item	Category	Location
CommunityService		
Core OneStep Cashiering	Tax Department	City Hall - Server Farm
Crestron Equipment - Council Chambers		City Hall - Council Chambers
Cummins Insite - Fire		
DataMover		
Diagnostic Link - Fire		
District Calls	Mayor & Council	
DownHome Loan Manager		City Hall - Server Farm
DriverCheck		
EPPDNET		
EPTOLL	Street Department	City Hall - Server Farm
eTicket	Police Department	
FAS-Ops Asset Tracking		
Fleet		
FleetAnywhere		
FleetBoss		
FMIS	Fire Department	Fire HQ
FRMS	Fire Department	Fire HQ
FuelFocus	Vehicle Maintenance Department	
Fugitive	Police Department	
Galisco Recordtest - Fire		
GovQA	Enterprise Application	
Graphics Advantage - Fire		
HEAT	Enterprise Application	City Hall - Server Farm
Horizon	Library	City Hall - Server Farm
i/LEADS	PD & Courts	PDHQ / County Building
i3DVR	Police Department	City Hall, MVRCC, CRCC, PDHQ, NERCC, PHRC, WSRC
IAPro	Police Department	PD-Internal Affairs
IDIS - HUD	Community Development Department	
Idokorro Mobile Admin	Enterprise Application	City Hall - Server Farm
Inventory	Enterprise Application	City Hall - Server Farm
IPAQ	Library	City hall Server Farm
IQ Report Writer - Fire		

EXHIBIT A - APPLICATION LISTING

Item	Category	Location
IronPort	Enterprise Application	City Hall - Server Farm
IVR Application	Permits & Inspections Department	City Hall - Phone Room - Basement
JurySummons	Muni Courts	
Kronos	Enterprise Application	City Hall - Server Farm
LANIER Scanning/Printing/Faxing	Enterprise Application	City Wide
Lan-Link Trash Collection		
Liberty	Police Department	Muni Courts - Basement - Property Control
Library Cards Application	Library	
Liscad	Engineering Department	
Maintstar	Street Department	MSC - Server Room
MAPPS		
MasterTrack+		
McAfee EPO/Virus Scan	Enterprise Application	City Hall - Server Farm - & Repositories
Meritor WABCO - Fire		
Merrit	Human Resources Department	
Microsoft Exchange	Enterprise Application	City Hall - Server Farm
Microsoft Project Server	Enterprise Application	City Hall - Server Farm
Microsoft SMS	Enterprise Application	City Hall - Server Farm
Mitchel on Demand	Vehicle Maintenance Department	MSC - Server Room
MOM - Microsoft Operations Manager	Enterprise Application	City Hall - Server Farm
MotoMesh		
MRTG	Enterprise Application	City Hall - Server Farm
NetBacku/BackupExec	Enterprise Application	CH, PDHQ, Fire, MSC
Open Records Database		
OpenDocs/PCDocs	Legal Department	City hall - Server Farm
PastPerfect	Museums	
Pawnshop	Police Department	
Payroll		
PD Video Storage	Police Department	
PeopleSoft - HR 8.9		
PeopleSoft - Financials 8.4	Enterprise Application	City Hall / PDHQ Server Farms
PhoneLog		
Pitney/Bowes		

EXHIBIT A - APPLICATION LISTING

Item	Category	Location
PowerSight Manager	Building Maintenance Department	
Project Dox	Developmental Services Department (DSD)	City Hall
Pros		
Q-Flow	Permits & Inspections Department	City Hall - Server Farm
RainBird	Parks Department	Parks - Central Corral
Real Media Streaming - Helix		
Record Keeping		
RescueNet	Fire Department	Fire HQ Server Room
RMS	Police Department	PDHQ Server Room
Roland Dr. Engrave - Fire		
RSVP Reporter		
RTA	Fire Department	Fire HQ Server Room
Scott Posicheck 3 - Fire		
Security Access Control System	Police Department	
Sex Offender	Police Department	
SharePoint	Enterprise Application	City Hall - Server Farm
Sigma	Human Resources Department	City Hall - Server Farm
StationLog	Police Department	
SureSync	Police Department	PDHQ - Server Farm
Tax Pro	Tax Department	
TexShare (Library)	Library	
Tidemark Advantage	Permits & Inspections Department	City Hall - Server Farm
Tidemark Deposits	Permits & Inspections Department	City Hall - Server Farm
TMA	Airport	El Paso International Airport
Trapeze	Sun Metro	Sun Metro
Verizon Wireless Cards		
Video Conferencing - various applications at this time	Enterprise Application	
Visual HR (Permis)	Human Resources Department	
WebEOC	Fire Department	City Hall - Server Farm
Westlaw		
Windows Update Server	Enterprise Application	City Hall - Server Farm
Zootrition		Zoo

Exhibit B - User Survey Results



Survey Results -- Overview

[Export Data](#)

[Individual Responses](#)

The City of El Paso - Systems User Survey

Respondents: 459 displayed, 459 total

Status: Closed

Launched Date: 11/11/2008

Closed Date: 03/13/2009

Display:

[Manage Filters](#)

0 filters

[Share Results](#)

Enabled

1. Goals for Information Technology

	Very Important	Important	Neutral	Unimportant	Very Unimportant	Response Total
a. Support/respond to user interests and objectives.	71% (307)	24% (102)	4% (16)	0% (0)	1% (6)	431
b. Implement IT products based on ease of use.	50% (214)	41% (175)	7% (31)	1% (4)	1% (5)	429
c. Implement IT products based on user interests and objectives.	50% (216)	38% (165)	9% (40)	0% (2)	1% (6)	429
d. Implement IT products based on the ease of implementation and conversation.	37% (159)	40% (170)	20% (84)	1% (6)	2% (7)	426
e. Implement IT products to increase user efficiency.	70% (300)	25% (108)	4% (16)	0% (0)	1% (6)	430
f. Implement IT products to enhance and increase accessibility to data by employees.	66% (281)	29% (125)	3% (14)	0% (0)	1% (6)	426
g. Implement IT products to enhance and increase accessibility to data by users (i.e. web-based).	59% (252)	33% (141)	7% (28)	0% (1)	1% (6)	428
h. Reallocate additional resources to the appraisal function to help minimize already challenging workload pressure.	36% (152)	36% (154)	26% (110)	1% (4)	1% (4)	424
i. Provide regular on-going IT training for all employees.	52% (222)	35% (151)	11% (48)	0% (2)	1% (6)	429
j. Ensure employees have equipment to do their jobs effectively and efficiently to help maintain a flexible environment in which the Department can adapt to change.	81% (347)	16% (69)	2% (7)	0% (0)	1% (6)	429
k. Enhance operations systems (e.g., communication tools, procedures, record keeping) to ensure the quality and efficiency of services to the users and stakeholders.	59% (251)	32% (137)	8% (33)	0% (2)	1% (5)	428

l. Provide a clear exchange of information to users and stakeholders.	48% (202)	39% (165)	11% (47)	1% (5)	1% (6)	425
m. Develop/Maintain a positive and collaborative work force.	57% (245)	32% (136)	9% (37)	0% (2)	2% (7)	427
n. Maintain strong network and communications infrastructure.	67% (284)	27% (115)	5% (20)	0% (1)	2% (7)	427

2. Please provide any additional goals you see as important to the City of El Paso not listed above.

View responses to this question [view](#)

Total Respondents **95**
(skipped this question) 364

3. Help Desk Process

	Excellent	Good	Neutral	Fair	Poor	N/A	Response Total
a. The Help Desk's responsiveness in meeting our needs (this includes availability, returning telephone calls, and ability to answer questions) has been...	26% (105)	47% (191)	10% (39)	10% (41)	5% (20)	2% (7)	403
b. Quality of services provided is...	29% (118)	50% (203)	7% (30)	9% (35)	2% (10)	1% (6)	402
c. The expertise of our Help Desk personnel is...	35% (138)	43% (172)	11% (44)	8% (31)	2% (7)	2% (6)	398
d. The Help Desk's ability to meet your batch processing needs is...	17% (66)	29% (117)	21% (85)	5% (19)	3% (13)	25% (98)	398
e. Quality of support provided for PC processing is...	18% (71)	43% (174)	18% (73)	9% (38)	3% (13)	8% (32)	401
f. Quality and responsiveness of support by the Operations is...	21% (82)	44% (173)	14% (57)	11% (44)	5% (18)	6% (22)	396
g. Quality of printed output, report preparation, and delivery service provided is...	15% (59)	30% (121)	23% (92)	6% (23)	3% (11)	23% (92)	398
h. Quality and responsiveness in solving telecommunications problems is...	21% (83)	40% (158)	16% (62)	10% (39)	7% (28)	8% (30)	400
i. The technical ability of the Technical Support Staff appears to be...	31% (123)	46% (185)	12% (50)	7% (28)	2% (8)	2% (8)	402
j. Overall, how would you rate the service you receive from the Help Desk?	28% (114)	47% (188)	10% (39)	9% (38)	4% (17)	2% (7)	403

4. Application Support

	Excellent	Good	Neutral	Fair	Poor	N/A	Response Total
a. The experience I have had in using the Application Support services has been...	11% (42)	33% (125)	13% (48)	7% (27)	3% (12)	33% (127)	381
b. Based on my experience, the reputation of Application Support is...	10% (39)	30% (113)	14% (54)	7% (28)	4% (15)	34% (129)	378

c. Timeliness of work completed has been...	12% (45)	30% (112)	13% (48)	10% (37)	5% (20)	31% (115)	377
d. The success of support being completed is..	14% (54)	31% (115)	13% (48)	7% (28)	4% (16)	31% (116)	377
e. The quality of work completed by Application Support staff was...	15% (57)	30% (114)	14% (54)	5% (20)	3% (13)	32% (121)	379
f. Overall, how would you rate the service your Department receives from the Application Support Area..	13% (50)	32% (120)	12% (47)	7% (26)	4% (17)	31% (118)	378

5. What services should the Application Support offer that it currently does not?

View responses to this question [View](#)

Total Respondents **73**
(skipped this question) 386

6. What one thing should the Application Support undertake to improve service?

View responses to this question [View](#)

Total Respondents **69**
(skipped this question) 390

7. Systems/Application Training

	Excellent	Good	Neutral	Fair	Poor	N/A	Response Total
a. Quality of the Training Staff is...	12% (43)	32% (117)	13% (49)	6% (23)	4% (16)	32% (118)	366
b. The appropriateness of the classes provided is...	8% (29)	30% (108)	16% (58)	10% (37)	5% (17)	32% (116)	365
c. The value of the training received was...	9% (34)	29% (105)	16% (58)	7% (27)	5% (17)	34% (122)	363
f. The facilities used for the Training process are...	10% (37)	29% (104)	14% (50)	9% (33)	4% (14)	34% (125)	363
g. The ability of the Training area to answer technical questions by telephone is...	11% (40)	25% (92)	17% (64)	5% (20)	5% (17)	36% (133)	366
h. Overall, how would you rate the service your department receives from the Training Process?	9% (34)	28% (103)	16% (58)	10% (35)	5% (19)	31% (114)	363

8. What classes should the Training area offer that it currently does not?

View responses to this question [View](#)

Total Respondents **88**
(skipped this question) 371

9. Use of Technology

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Response Total
a. I have the ability to make the most efficient use of technology in performing my duties.	22% (81)	42% (157)	18% (67)	15% (55)	3% (13)	373
b. Adequate information is available and accessible to me from the existing technology within The City of El Paso's information system?	11% (39)	36% (134)	29% (109)	19% (72)	4% (16)	370
c. In the use of the City of El Paso's system I experience little or no unexpected downtime?	11% (39)	37% (137)	18% (68)	21% (79)	13% (47)	370

Detailed Responses to Question Two

Please provide any additional goals you see as Important to The City of El Paso not listed above

Survey Results -- Details

[Results Overview](#)

The City of El Paso - Systems User Survey

Respondents: 459

Status: Closed

Launched Date: 11/11/2008

Closed Date: 03/13/2009

Full Response

1. The goal of the IT Strategic Plan for the City should be to identify leading edge technology and make the necessary investment to provide that technology to businesses, organizations and the public at large. [view](#)
 2. The goal of this goal would be to entice companies to relocate to El Paso thereby creating more and better paying jobs as well as a broader tax base. [view](#)
 3. Provide services in a timely manner. [view](#)
 4. Implement Office 2007! The lack of interface is becoming cumbersome with other entities! [view](#)
 5. When it is stated that IT will "Look into it and correct right away" please stand by your words. You must remember, we are all overly dependent on IT components to complete OUR work, and when your all's equipment and network does not work, we look bad and become back logged. You have NOT done a [view](#)
 6. -Follow up on calls. [view](#)
 7. -Have a system set up where you can go on-line to log your request. and have this system available so that the user can see when it was assigned to the tech and who that tech is. [view](#)
 8. Provide complete and comprehensive follow through on questions and concerns of City staff. [view](#)
 9. Keep up with technology and microsoft products that are currently being utilized. Implement Wi-fi capabilities for all users and visitors. It is very frustrating to have someone visit this building and not have wi-fi capability. while it is important to keep security in mind, the county provides that flexibility within the courthouse, which includes a multitude of courts, and still maintain security measures. [view](#)
 10. I think it is important to ask the users because in their area of expertise, they may have tried different programs and we may be stepping backwards instead of forwards. [view](#)
 11. More training on equipment [view](#)
 12. Respond and correct pc problems!... SHOW UP!!!!!!!! That be a START!!!!!! [view](#)
 13. Business continuity planning. [view](#)
 14. Software standardization for emerging technology. [view](#)
 15. Be able to address and keep an open door policy through out each department. Allow employees to address and complete tasks with their knowledge to their best of the ability in an efficient manner. [view](#)
 16. SERIOUSLY??!! Why wouldn't all of these issues be important??!! El Paso doesn't adapt to technology very well. They buy the cheapest and most outdated equipment, and it's not user friendly. Instead of making things easier, it makes it more difficult. ie.. I-Leads/ Live Scan [view](#)
- In order to do our jobs effectively we need to have both the skills and the equipment to do so. Often times we are lacking one or the other. Citizens demand competent staff at all departments to serve them and sometimes if there is no funding to provide better training or no funding to provide better

14. software then it appears the staff is not competent to do the job required. Sometimes we do the best we can with very old computers and very little on the job training. Communication (lack of) is one of the biggest problems and developing a network would be helpful. [view](#)
15. We need to delete files from employees that are no longer employed by the city. We have an outdated system that either freezes or slows down our computers sometimes making it hard to work online. [view](#)
16. fiber optic communication, wi-fi access [view](#)
17. Remain on the forefront of technological resources such as Wi-Fi and fiber optic connections. [view](#)
18. The system needs to be faster, and it goes down way too often. I work with customers and they even complain about our system. [view](#)
19. PROVIDE MORE ADEQUATE TRAINING WHEN IMPLEMENTING NEW PROGRAMS AND SOFTWARE. [view](#)
20. Provide updated pc's with more memory to be able to perform data entry and retrieval with more efficiency and speed. [view](#)
21. Integrate reimbursement procedures into databases universally, allowing work stations or portable equipment to be integrated so information is documented one time and linked directly to appropriate devices [portable computers, Blackberrys, etc.]. [view](#)
22. Provide a system that is not SO SLOW all the time. [view](#)
23. customer service & response must be primary (having to wait 2-3 days up to a week for a response from IT or being totally ignored by IT is not acceptable). timely & clear communication by IT to the end-user and coordination with the end user, regarding updates, upgrades, modifications, changes, etc. must also be a top priority (it certainly isn't happening now) [view](#)
24. this survey needs to be re-designed. I bearily got through this page. I will not be finishing this survey. This survey can not possibly mean anything to anyone except the person who wrote it. sorry. [view](#)
25. Response time to issues and problem resolutions presented through ATG-Very Important [view](#)
26. Conversion from regular and T-1 lines to Fiber optic connects. [view](#)
27. As in "j."; equipment must include the PCs we are working with. PCs running with a Pentium III and 194KB of Ram is not working. Hours are wasted each day waiting for a PC to catch up with the user. [view](#)
28. 1)Deliver timely and effective responses to customer requirements. 2)Work with City agencies to improve business operations by thoroughly understanding business needs and by planning, implementing and managing the best information technology solutions available. 3) Develop and maintain technically skilled staff who are competent in current and emerging information technology. 4) Provide vision, leadership, and a framework for evaluating emerging technologies and implementing proven information technology solutions. [view](#)
29. Mandate accountability from IT for failures and inappropriate actions imposed on users and departments, especially when such is a result of a failure to communicate or collaborate with the serviced entity. Ensure appropriate remedial and/or disciplinary/legal action is pursued in a timely and effective manner. [view](#)
30. Statagic replacement of end user computers based on a 3 year replacement plan. We have computers going on 5 or 6 years old which simply put, slow down productivity to a snails pace. [view](#)
31. Separate training sessions for new users and enhanced capability training for established users. [view](#)
32. Uniform standard format in the way information is record (name, address, city, etc). City takes in a lot information and information is not searchable. [view](#)
33. Keep the software updated to the most recent versions across City applications. [view](#)
34. Insure communication capability across City/County/othe stakehloder lines. [view](#)
34. Have a truly proffesional IT team that does not give the impression they are being paid by the visit. One that truly fixes the problem before they want to go on to the next job. [view](#)

35. Provide subject matter experts for users to contact about questions and problems on each software program available on the network. Currently, users must rely on Help within the software (and we all know how frustrating that can be) or trying to find a co-worker who may have found a solution to a problem. [view](#)
36. Many of the questions above touch on this, but the strategic goal of the City should include the development of a centric repository of client and constituent data from which all city's systems relate this information. As an example, one complete business, property or citizen record related to Accela, Peoplesoft, Central Appraisal, etc. [view](#)
37. Provide consistent connectivity to areas outside of City Hall so that employees there can be equally efficient. [view](#)
37. Provide a replacement system so that hardware is updated throughout the City on a regular basis. Institute an enterprise phone system and management and acquisition in IT rather than allowing and requiring individual areas to purchase their own phone systems. [view](#)
38. N/A [view](#)
39. It has taken 3 weeks or more sometimes to get a workorder serviced. Three weeks is a long time to be without one's computer. Is there a way to improve response times for the workorders? [view](#)
40. Develop clear procedures related to IT, such as purchasing IT products, requesting service from IT staff, updating web pages, etc. [view](#)
41. Respond to work requests in a MUCH MORE timely manner. [view](#)
42. Training through department scheduled sessions coordinated with IT. Many times, Parks & Recreation staff is unable to attend the sessions offered through the Human Resources Dept. due to scheduling conflicts. Follow-up training is also needed as technological changes come rapidly. [view](#)
43. Incident response time can be worked on. [view](#)
44. get it to work on a regular basis. i cannot recall a single day, when the system has worked without a problem. [view](#)
45. Implement a better vetting process in hiring IT personnel, i.e. test of knowledgeability as opposed to word of mouth (friends hiring friends). Increase wages to lure better qualified people to apply. [view](#)
46. When employee is promoted to a dept., it work feasible if access to programs could be accessed much sooner. it takes about 4 days to be able to get access. Even employees who had it before the promotion, it takes about 4 days or sometimes longer. [view](#)
47. provide equipment and accessibility to IT for job performance [view](#)
48. Quick response to service request. [view](#)
49. N/A [view](#)
50. Maintain equipment and replace as needed. [view](#)
51. Do something about the problems with Microsoft Outlook always going down. This is very frustrating and interrupts the work flow. Also, it is my understanding that the City has purchased Microsoft Office 2007 but refused to upgrade the users because they do not feel we can learn to use it. If this is true, this is ridiculous and a waste of City funds. [view](#)
52. As an employee of the FIRE Dept., it would be extremely useful to have a single user name to gain access to the many user applications necessary to accomplish our daily tasks. For example, we have WebEoc, Fire Records, Telestaff, FMIS, PeopleSoft, Kronos, and Outlook. This encompasses a different username and password for each application. Having a single user name to gain access to all these programs would be EXTREMELY useful. [view](#)
53. I think it very important that the City of El Paso use the technology resources we currently have access to and even if other departments have resources to purchase the latest version of software that they not be allowed to do so unless they can provide this latest version and training for all departments that they interacted with. If the latest software is not cost effective for the whole city then it is of no use. [view](#)

Global modernization of system wide resources to assist in implementing the newest and most

54. current resources, materials, methods, and/or procedures. [view](#)
55. Quicker response times to IT issues [view](#)
56. None [view](#)
57. pretty much all are covered [view](#)
- Allocate resources based on need
Determine needs of end-users
Base decisions on needs of end-users
58. Hire truly qualified personnel [view](#)
Learn the difference between line staff and support staff
Develop a support-the-end-user mentality
59. The city of el El Paso, needs to provide to some departments with a new computer equipment and discards the obsolete one. [view](#)
60. I think it's time to update the citywide network with Windows Vista! [view](#)
- Be proactive in the discovery, and evaluation and subsequent acquisition and implimentation of new technologies so that our IT system helps employees function more efficiently. We should all be introduced to and informed about new options that are available in the technology world. The City IT department should be aware of and applying new uses to our everyday jobs.
61. [view](#)
62. The ability to assist employees with computer problems as soon as possible. [view](#)
63. Keep in-house Computer Expert in the Department. [view](#)
- The Information Technology crew perfoms very satisfactorily to the needs of the network users. Please do not implement changes that will produce a less effective IT department. Several times, outside agencies have been contracted to evaluate city systems and in several instances the net result has been a screw up, less effective changes than originally planned.
64. [view](#)
- All of these goals are very important. If you're trying to prioritize them you should approach it that way.
65. [view](#)
- We can provide free wi-fi for downtown (and as it turns out parts of cd. juarez that ended up being used by the cartels as evidenced in earlier e-mails this year) but we can't get modems in fire stations that are fast enough to process info before the log-in screen on some programs times out!!
66. [view](#)
- Get us computers at Fire Stations that can handle the numerous new web-based programs that we are being inundated with. The circa 1990's computers we have take forever to load programs and often freeze-up, or work extremely slow. This has been a problem for a long time and is only getting worse!
67. [view](#)
- Faster internet connection, time is lost when uploading programs and call information, even that the city has a cable internet is the lowest on speed almost compared with dial up
68. [view](#)
- QUIT SPREDDING OUT MORE THINGS TO DO. CONSOLIDATE! TOO MANY AUTHORS/CREATORS JUST WANT TO SEE THEIR NAME IN PRINT.
69. [view](#)
70. 1. Using fiberoptics as backbone in all departments. [view](#)
71. N/A [view](#)
72. Make the IT staff more friendly. Some of the snap at you when you ask for their help. [view](#)
- I did not understand question g, and thus did not answer. As a user department, the key is not so much how easy it is for IT to implement software to help me achieve my department's goals, but how well it can be implemented, how easy it is for me as the user to use and how well IT can continue providing support and ensuring that updates are available so the software maintains its functionality.
73. Another factor that should also be considered by IT is providing users resources to complete their jobs efficiently and effectively. While additional peripherals may increase capital and maintenance costs, there is no greater cost than an employee who cannot complete his/her work timely because of equipment shortages/maintenance problems. The human factor must be considered in the productivity equation and balances with system costs. [view](#)
74. To assist users with procurement and research of new and better web-based software. [view](#)

75. It is important that the IT people respond quickly to questions and be available for support as needed
Question H. - what is "the appraisal function"? [view](#)
76. Electronic archiving and access (selected hard copy files/documents) - very important [view](#)
77. SEcurity is a must [view](#)
78. Have IT staff work more efficiently. If at a remote location where work tickets already exist have the same tech work as much if not everything at once. [view](#)
79. PROVIDE UP DATE COMPUTER EQUIPMENT AND SOFTWARE TO CREATE UNIQUE PUBLIC RELATIONS INFORMATION TO PROVIDE STATE OF ART COMMUNICATION TO THE OUR USERS. [view](#)
80. quicker response to tech problems, upgrade equipment more often [view](#)
81. Users should not need administrative privilege to update software already installed in their computers. EX: There are new updates for adobe would you like to install now? Can't be done/need admin and not very efficient way to get things done/upgraded. [view](#)
82. IN regards to the ongoing IT training...would that best fall under HR to coordinate and schedule the training sessions? [view](#)
83. give easier access to fix problems [view](#)
84. IT or designated decision-maker should make decisions based on the overall City benefit and priorities and not consider department requests individually, a strategic city-wide plan, ranking priorities. [view](#)
85. training for those of us with little experience w/ computers [view](#)
86. IT does not support the Fire Department. Requests are often made, then they are ignored, and no status updates are ever sent. [view](#)
87. In departments utilizing department specific software, have on site dedicated staffing of knowledgeable IT staff. [view](#)
88. Ensure that we include in the fold those areas that are not housed in City Hall. The communication between City Hall and those outside must not bog down. We should strive in making things web based easier to get to - for example HR policies should be on the intra-net for employees to have access. [view](#)
89. Make it work fast. Waiting to long for programs to come up. [view](#)
90. Provide interactive and multi media capability for those departments and their units that provide educational services to the public. [view](#)
91. The City should also implement and enterprise plan table that shows only acceptable options for all hardware and software to enable more efficiency in budgeting and planning for Department growth. [view](#)
92. Prompt and timely customer service. [view](#)
93. Stay up-to-date with other agencies to make it easier to service them. [view](#)
94. Keeping the emails up and running at all times and when systems go down, such as emails and kronos, be quick to resolve. Not leave the clinic level down for months at a time. [view](#)
95. I think we need new computers, and better programs that can keep up. Most of this department if not all are having trouble with these computers and programs. For example 1. calls are taking a very long time to put into firerecords system and for that reason companys are being backed up in putting calls in and closing them. 2. We spend most of the shift playing catch up. 3 If we can find a program that prevents duplication of effort, for example Rescue and fire units sharing info in one program take Rescue units for example medics have rescue net, and fire companys have firerecords if we can make these two programs into one that way we can all share the info. [view](#)

Detailed Answers to Question Three



Survey Results -- Details

City of El Paso - IT Board Member Survey

Respondents: 7

Status: Closed

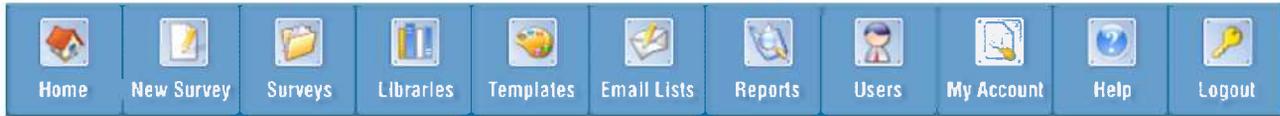
Launched Date: 02/05/2009

Closed Date: 04/13/2009

3. Please list any additional Information Technology Policies that you feel are in need of addressing by the City.

1. Commitment to open standards

Detailed Answers to Question Four



Survey Results -- Details

City of El Paso - IT Board Member Survey

Respondents: 7

Status: Closed

Launched Date: 02/05/2009

Closed Date: 04/13/2009

- 4.** Please provide us any other information you feel would be important in the Information Technology strategic planning process.
1. Follow Thru
 2. role of advisory board
 3. More City Department buyin on the IT process. Understanding the need for standardazation, the departaments have specific needs that are outside of the standards for custom applications.

Exhibit B - City Council Survey Results



Survey Results -- Overview

City of El Paso - City Council Survey

Respondents: 6 displayed, 6 total

Status: Closed

Launched Date: 02/05/2009

Closed Date: 04/13/2009

Display: 

1. Goals for Information Technology

	Very Important	Important	Neutral	Unimportant	Very Unimportant	Don't Know	Response Total
a. Support/respond to user interests and objectives.	80% (4)	20% (1)	0% (0)	0% (0)	0% (0)	0% (0)	5
b. Implement IT products based on ease of use.	60% (3)	40% (2)	0% (0)	0% (0)	0% (0)	0% (0)	5
c. Implement IT products based on user interests and objectives.	80% (4)	20% (1)	0% (0)	0% (0)	0% (0)	0% (0)	5
d. Implement IT products based on the ease of implementation and conversation.	60% (3)	20% (1)	0% (0)	0% (0)	0% (0)	20% (1)	5
e. Implement IT products to increase user efficiency.	80% (4)	20% (1)	0% (0)	0% (0)	0% (0)	0% (0)	5
f. Implement IT products to enhance and increase accessibility to data by employees.	80% (4)	20% (1)	0% (0)	0% (0)	0% (0)	0% (0)	5
g. Implement IT products to enhance and increase accessibility to data by users (i.e. web-based).	80% (4)	20% (1)	0% (0)	0% (0)	0% (0)	0% (0)	5
h. Provide regular on-going IT training for all employees.	60% (3)	20% (1)	20% (1)	0% (0)	0% (0)	0% (0)	5
i. Enhance operations systems (e.g., communication tools, procedures, record keeping) to ensure the quality and efficiency of services to the users and stakeholders.	40% (2)	60% (3)	0% (0)	0% (0)	0% (0)	0% (0)	5
j. Provide a clear exchange of information to users and stakeholders.	80% (4)	20% (1)	0% (0)	0% (0)	0% (0)	0% (0)	5
k. Maintain strong network and communications infrastructure.	60% (3)	40% (2)	0% (0)	0% (0)	0% (0)	0% (0)	5
	Total Respondents						55

2. Please provide any additional goals you see as important to the City of El Paso not listed above.

View responses to this question [view](#)

Total Respondents 2
(skipped this question) 4

3. Please rank the following technology issues by level of importance to the City of El Paso:

	Very Important	Important	Neutral	Unimportant	Very Unimportant	Don't Know	Response Total
a. Wireless use within City facilities	80% (4)	20% (1)	0% (0)	0% (0)	0% (0)	0% (0)	5
b. Expansion of mobile computing devices (blackberry's and palm pilot's)	40% (2)	40% (2)	0% (0)	0% (0)	0% (0)	20% (1)	5
c. Unified communications (voice migration to voice over IP)	20% (1)	40% (2)	20% (1)	0% (0)	0% (0)	20% (1)	5
d. Expansion and use of video conferencing	20% (1)	40% (2)	20% (1)	20% (1)	0% (0)	0% (0)	5
e. Online data backup and data replication for fast recovery from failure	20% (1)	60% (3)	20% (1)	0% (0)	0% (0)	0% (0)	5
f. Hosted software applications outside the city's infrastructure	20% (1)	60% (3)	0% (0)	0% (0)	0% (0)	20% (1)	5
g. Better online presence including public access to information	80% (4)	20% (1)	0% (0)	0% (0)	0% (0)	0% (0)	5
h. City-wide document imaging and management	20% (1)	60% (3)	0% (0)	0% (0)	0% (0)	20% (1)	5
i. IT Training within the City	40% (2)	40% (2)	0% (0)	20% (1)	0% (0)	0% (0)	5
							Total Respondents 45

4. Please provide any other items you feel of important to consider for City IT going forward.

View responses to this question [view](#)

Total Respondents 1
(skipped this question) 5

5. Please rate the priority of the IT Department organization and management.

	Very High	High	Neutral	Low	Very Low	Don't Know	Response Total
1. Information Security Management - The development and implementation of a comprehensive security framework encompassing people, processes and IT systems that safeguards critical systems and information, protecting them from internal and external threats.	25% (1)	25% (1)	25% (1)	25% (1)	0% (0)	0% (0)	4
2. IT Governance - A structure of relationships and							

processes that direct and control an organization and help it achieve its goals by adding value while balancing risk versus return over IT and its processes.	25%	(1)	0%	(0)	50%	(2)	0%	(0)	0%	(0)	25%	(1)	4
3. Business Continuity Management (BCM) and Disaster Recovery Planning (DRP) - BCM is a comprehensive management process that identifies potential threats to an organization and the impact those threats may have on business operations. Disaster Recovery Planning is the development and testing of a plan to restore an organizations' technology infrastructure after a disaster.	25%	(1)	25%	(1)	50%	(2)	0%	(0)	0%	(0)	0%	(0)	4
4. Privacy Management - The rights and obligations of individuals and organizations with respect to the collection, use, disclosure and retention of personal information.	50%	(2)	25%	(1)	0%	(0)	25%	(1)	0%	(0)	0%	(0)	4
5. Business Process Improvement (BPI), Workflow and Process Exception Alerts - Methods used to enhance business and transaction processing through a continuous cycle of modeling, execution, monitoring and improvement.	50%	(2)	25%	(1)	25%	(1)	0%	(0)	0%	(0)	0%	(0)	4
6. Identity and Access Management- The hardware, software and processes used to authenticate a user's identity then provide users with appropriate access to systems and data based upon pre-established rights and privileges.	25%	(1)	50%	(2)	25%	(1)	0%	(0)	0%	(0)	0%	(0)	4
7. Business Intelligence (BI) - The applications and technologies used for gathering, providing access and visibility to, and analyzing data to help business owners and manager make informed business decisions. writers and application dashboards.	50%	(2)	50%	(2)	0%	(0)	0%	(0)	0%	(0)	0%	(0)	4

Total Respondents 28

6. Please provide any IT Department management priorities that should be considered high.

View responses to this question [View](#)

Total Respondents 1

(skipped this question) 5

7. Please provide us any other information you feel would be important in the Information Technology strategic planning process.

View responses to this question [View](#)

Total Respondents 1

(skipped this question) 5

EXHIBIT C - Staff Calculation

IT Department Staff Calculation Worksheet

Category/Item Description	Quantity	Divisor	Staff Needed
Computer installation, maintenance and repair:			
A. Number of computers, printers and peripherals in full-time use:	5021	500	10
<p>Some computers are used almost constantly, and others rarely, this will be an approximate figure. The number of computers entered should not be the gross number, but instead the number in use 60-100% of the time during 5 business days per week. Adjust for those that are used less. It may also be possible that some computers receive extra use (for example evening and weekend classes). If this tends to increase their breakdown rate, adjust to reflect the increased usage. Included in this number are printers, scanners and any other peripherals that receive substantial use and require repair.</p>			
B. Number of major LAN's, network operating systems, Internet servers, sizable central databases, etc. that must be monitored and managed:	149	5	30
C. Total number of software applications in use on each one of the computers. This may be an actual inventoried count, or an average number of software applications that must be installed and maintained by technology staff on each computer multiplied by number of computers in full-time use:	42936	5000	9
<p>All applicataions in use (do not use more then one for office application i.e. one for Microsoft Office not for Excell, Word ... They may be widely used or only in a single classroom, but do require installation, troubleshooting and support. Each time an application is installed on it different computer, it is counted.</p>			
Training needs:			
D. In-service training, one-on-one help in getting computers and applications to work, creation of written materials, help desk question answering, etc. This involves all interaction with users beyond taking repair requests. Number of users:	5000	1000	5
<p>The number of management, administrators and staff using computers full time (between 60 and 100% of the day). Since many managment personnel may not have access to computers for much of the day, they would not count as full users. Because each user does require training and support, they do need to count. So roughly, someone who accesses a computer during 50-100% of hours in a day, is a full user. Someone who accesses a computer daily, but during 10-50% of the hours in the day, is a 50% user. A person who accesses the computer occasionally (only a few times a week or less) is a 25% user.</p>			
Administrative support:			
E. Number of Administrators: Reflects staff dedicated to detailed computer use and its integrated in operations.	15	150	0
Other technology responsibilities:			
F. Webmaster/web content developer (number of full-time staff needed)	 	 	-
G. Telephone/telecom/data communications (full-time staff needed)	 	 	8
H. Video, audio, satellite and broadcast services (number of full-time staff needed)	 	 	2
I. Sever support (full-time staff needed)	 	 	5
J. Other non-computer technology services (number of full-time staff needed)	 	 	8
<p>Includes telephones, all video, audio, satellite and broadcast systems, VCR's, copiers, security systems, voicemail, and any other responsibilities that are delegated to the technology department in the district.</p>			
Management, administration and administrative support			
K. Number of full time management and administrative personnel needed.	 	 	-

EXHIBIT C - Staff Calculation

IT Department Staff Calculation Worksheet

Category/Item Description	Quantity	Divisor	Staff Needed
<p>Management and administrative duties are generally handled by the personnel who manage technology plans and policies, research, attend meetings and conferences, report on compliance, apply for and monitor grants, manage other fund raising activities, handle major purchases, maintain inventory records, study and implement options for reducing Total Cost of Ownership, supervise other staff, deal with outsourced providers of services, and do a variety of other management level tasks that are not incorporated in the other duties listed.</p> <p>Technology management also provides the administrative support including a variety of clerical, reception, payroll and related tasks.</p>			
PRELIMINARY SUBTOTAL (add A - K)			77

Modification for environmental factors:

Environmental:

If more than one of the following factors is affecting the organization add between 10 and 20% to total staff needed.	
Physical size is very large (buildings and facilities are widely separated)	20%
The organization consists of many buildings (more than 10)	20%
Buildings are old and/or badly wired or set up for technology	10%
Computers are generally more than 2 years old or not of high quality	20%
Computers are of a wide variety of brands, models and types	
Computer software installation is NOT centralized--all software installation and upgrades must be done at the individual computers	
Computer maintenance is NOT centralized--repairs must all be done at the affected computer	
Significant reliance is technology-based	10%
Environmental factors modification to use:	16%

Technology priorities:

Make an adjustment for the organizations priorities with respect to information technology as follows:	
Decrease by up to 25% for low-tech organizations, or organizations that do not make heavy of their IT environment.	
Increased by up to 25% for high-tech organization, or organizations with a goal to substantially improve their use of technology.	
Technology priority factor modification to use:	25%

Total estimated IT Department staff before outsourcing	108
Number of positions outsourced	-
Total estimated IT Department staff	108

Job Description – Senior Business Analyst

Class Title: **Senior Business Analyst**

Job Code Number:

Department:

Grade Number:

Division:

Union:

Date:

Location:

General Purpose:

Perform analysis of the operations in functional areas and departments within the organization with the purpose of developing general system solutions to problems that may or may not require automation. Provide insights into departmental operations and where appropriate and necessary, proposing reengineering to business processes.

SUPERVISION RECEIVED:

The Senior Business Analyst works under the general direction of the Deputy CIO.

SUPERVISION EXERCISED:

[List as appropriate]

Essential Duties:

Analysis and Solution Definition:

- Quickly understands the business issues and data challenges of the organization/department.
- Identifies the department's strengths and weaknesses and suggests areas of improvement.
- Reviews and edits requirements, specifications, business processes and recommendations related to proposed solution.
- Develops functional specifications and system design specifications for projects assigned.

Technical Recommendation and Testing

- Leads the development of test plans and testing efforts.
- Ensures issues are identified, tracked, reported on and resolved in a timely manner.
- Works with function and department personnel to identify required changes.
- Communicates needed changes to the development and/or implementation teams.

Project Execution

- Assists in enforcement of project deadlines and schedules.
- Takes input from supervisor and appropriately and accurately applies comments/feedback.
- Communicates and applies project standards.
- Manages resources in accordance with project schedule.
- Consistently delivers high-quality services to internal departments being served.

PERIPHERAL DUTIES:

Communication

- Assists in the facilitation of team and internal customer meetings.
- Delivers informative, well-organized presentations.
- Understands how to communicate difficult/sensitive information tactfully.

Technical Understanding

- Understands business process.
- Possesses understanding in the areas of application programming, database and system design.
- Understands Internet, Intranet, Extranet and client/server architectures.
- Understands how legacy and web-based systems interface with each other.

Problem Solving

- Identifies critical issues with ease.
- Exhibits confidence and an extensive knowledge of emerging industry practices when solving business problems.
- Pushes creative thinking beyond the boundaries of existing industry practices and client mindsets.

Teamwork

- Facilitates effective team interaction.
- Acknowledges and appreciates each team member's contributions.

Internal Customer Management

- Develops relationships with personnel that foster internal customer ties.
- Communicates effectively internal customers to identify needs and evaluate alternative business solutions with project management.
- Manages expectations effectively.

DESIRED MINIMUM QUALIFICATIONS:

Education and Experience:

- (A) Graduation from an accredited four year college or university with a degree in information technology, MBA, management information services, computer science or a closely related field; and
- (B) Five (4) years of progressively responsible related experience.

Approval: _____
Supervisor

Approval: _____
Appointing Authority

Effective Date:

Revision History:

Problem Solving

- Understands how various issues affect each other and the outcome of projects.
- Improves upon existing approaches by seeking opportunities to creatively transform current industry practices into fresh alternative solutions.

PROFESSIONAL QUALITIES

Leadership

- Follows through with commitments and fosters mutual trust with fellow Innovators.
- Assumes additional responsibility without being asked.
- Encourages fellow team members to make innovative contributions and embrace new ideas.

Teamwork

- Proactively initiates, develops, and maintains effective working relationships with team members.
- Recognizes the strengths and weaknesses of each team member .
- Demonstrates the ability to cooperate with a variety of people and achieve results.

Client Management

- Anticipates client needs before they arise and presents solutions to project management that encompass issues at hand.
- Understands expectations that were set with client and recognizes when issues/events may affect delivery.

ORGANIZATIONAL RESPONSIBILITIES

Innovator Development

- Proactively seeks opportunities to broaden and deepen knowledge base and proficiencies.
- Shares acquired skills with team members through formal and informal channels.
- Encourages more junior Innovators to take responsibility for their development within the company.

Internal Operations

- Participates regularly in the recruitment of new employees through our interviewing process and involvement in recruiting events.
- Actively contributes to internal programs.

Job Description – Junior Business Analyst

Class Title: **Junior Business Analyst**

Job Code Number:

Department:

Grade Number:

Division:

Union:

Date:

Location:

PROJECT RELATED COMPETENCIES

Analysis and Solution Definition

- Documents client organization's direction, structure, business processes and requirements.
- Researches client organization's industry and competitive position.
- Assists in the collection and consolidation of required information and data.

Technical Recommendation and Testing

- Accurately and efficiently executes test plans.
- Assembles and documents all test results.
- Retests as necessary.

Project Execution

- Understands project plans and is able to clearly articulate roles, project goals, and timelines.
- Takes input from supervisor and appropriately and accurately applies comments/feedback.
- Adheres to project standards defined by project management.
- Accurately employs our methodology and documentation tools.
- Proactively carries out project support /administrative functions.
- Establishes responsible deadlines and personal work plans and manages time effectively.

CAREER PATH CORE COMPETENCIES

Communication

- Listens to others and accepts input from team members.
- Clearly articulate ideas and thoughts verbally.
- Accurately prepares written business correspondence that is coherent, grammatically correct, effective and professional.

Technical Understanding

- Understands basic Internet and client/server architectures.
- Possesses basic knowledge of HTML.
- Proficient in Microsoft Office suite.

Problem Solving

- Proposes solutions to problems and considers timeliness, effectiveness, and practicality in addressing client needs.
- Generates innovative solutions by approaching problems with curiosity and open mindedness, using existing information to its fullest potential.

PROFESSIONAL QUALITIES

Leadership

- Displays a positive attitude.
- Demonstrates flexibility in day-to-day work.
- Sets high standards of performance for oneself.

Teamwork

- Establishes harmonious working relationships with team members.
- Appreciates each team member's contributions and values each individual member.

Client Management

- Values internal and external clients and responds to their needs as they arise.
- Establishes effective working relationship with clients.
- Follows established communication guidelines.
- Uses good judgment in what and how to communicate with clients.

ORGANIZATIONAL RESPONSIBILITIES

Innovator Development

- Understands the professional development process and becomes actively involved by setting challenging goals and meeting them through continuous learning.
- Seeks input from mentors and supervisors.
- Actively applies feedback received to day-to-day work and strives to improve performance.

Internal Operations

- Accurately completes and submits time and expense reports in a timely manner
- Accurately completes and submits status reports in a timely manner
- Complies with all our policies and procedures

Strengths

- What does the City of El Paso's IT Department do well?
- What advantages does the City of El Paso's IT Department bring to the Organization?
- What valuable resources does the IT Department provide the City of El Paso?
- What do users, member, and stakeholders view as strengths?



Weaknesses

- What can the City of El Paso's IT Department do better?
- What is the City of El Paso's IT Department criticized for?
- What complaints does the City of El Paso's IT Department receive?
- Where is the City of El Paso vulnerable due to the IT Departments actions or inactions?

Opportunities

- What opportunities does the IT City of El Paso know about but has not addressed?
- Are there emerging trends in IT that the City of El Paso can use or take advantage of
- Has the City of El Paso invested in software and/or IT infrastructure that is unused or under utilized?



Threats

- Are IT weaknesses likely to make the City of El Paso vulnerable?
- What road blocks are likely to exist due to the existing IT organization structure?
- Are there changes likely to affect the City of El Paso's IT coming in the near term?
- Are conditions economic or otherwise likely to affect the IT environment?



The City of El Paso
 Information Technology Strategic Plan
 CSI SWOT Analysis

	Helpful To Achieving Objectives	Harmful To Achieving Objectives
Internal Origin (Attributes of the <Client Name>)	<p>Strengths</p> <ul style="list-style-type: none"> IT Department supports all levels of technology Strong Helpdesk support Low level of turnover in the IT Department Strong application capabilities within operating departments Appropriate upline of critical applications Operators see IT centralization seen as a plus GIS division has been very helpful Good project involvement by IT Department IT management and staff possess the right attitude, values, and commitment 	<p>Weaknesses</p> <ul style="list-style-type: none"> No training component with IT Department Lack of Capital Improvement Plan funding for City-wide IT infrastructure In ability / lack of refresh planning for operating departmental IT infrastructure GIS system operating disparate needs / accuracy Data storage space availability Public Safety issues. Not enough cameras or monitoring of the assets. E-mail is slow and sometimes locks up the computer. Installation desktop flexibility (Allow for power users). Lack of communication and collaboration. Lack of monitoring and reporting tools
External Origin (Attributes of the Environment)	<p>Opportunities</p> <ul style="list-style-type: none"> Proactively meet with departments to discuss needs and projects (More proactive than reactive) Business Analyst function Proactive bandwidth planning Transparency in IT capital improvements for refresh planning Application experts in functional areas Expanded Helpdesk hours Wireless Access Additional functionality desired by functional units Efficiencies through more integrated operations Deploy a City-wide document management system (Documentum) 	<p>Threats</p> <ul style="list-style-type: none"> Loss of revenue, incorrect billing, etc. Increased operating costs due to inefficiencies Lost opportunities to support the mission and objectives of the City's operating units Loss of public trust (city appears inefficient and outdated) Errors causing legal liability to the City Inability to provide comply with new regulatory requirements Un-trained staff causing errors, inefficiency and liability IT system failures due to outdated and inefficient equipment Security breaches

The City of El Paso
 Information Technology Strategic Plan
 Technology SWOT Analysis

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Internal Origin (Attributes of the <Client Name>)</p>	<p style="text-align: center;">Helpful To Achieving Objectives</p>	<p style="text-align: center;">Harmful To Achieving Objectives</p>
	<p style="text-align: center;">Strengths</p> <ul style="list-style-type: none"> • Support from all levels for the IT function • Strong Helpdesk support • Turnover in IT has improved • Good Software for the Library system - Sirsi/Dynex library system - integrated database and application on the same server. Web application is on a separate box in the DMZ. • Uptime of critical applications is exceptional. • Centralization has been very helpful. • GIS division has been very helpful. • Good project involvement. 	<p style="text-align: center;">Weaknesses</p> <ul style="list-style-type: none"> • Deficiencies in the Data Center Infrastructure (Fiber, Core Lines, Licensing, etc.) • Limited or no redundant power to support infrastructure • Limited Phone Capabilities • Replacement Planning (Outdated Equipment and Software) • Printers - use standardized printers or departmental printers to reduce printing costs • Succession planning for all areas but also IT. • Redundancy and proximity systems integration for all areas • Badging and • Lack of Intranet and external WEB design and support • Collaboration effort to utilize existing (Like) systems rather than purchasing a new one • Redundant license fees & added support needed
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">External Origin (Attributes of the Environment)</p>	<p style="text-align: center;">Opportunities</p> <ul style="list-style-type: none"> • Proactively meet with departments to discuss needs and projects (More proactive than reactive) • Business Analysts function needed. • Current phone system equipment could be leveraged to implement additional phone and email functionality. • Additional resources to clean up GIS issues • Combining functions of departments into the same software solutions. • Emerging new technologies 	<p style="text-align: center;">Threats</p> <ul style="list-style-type: none"> • Resources and funding are issues with respect to the environment • Power and cabling are issues with respect to the updating of voice communications and potential movement to VoIP. • Data Center is at risk of catastrophic failure due to water leak, sewage leak, heat, and fire. • CAT3 at some CAT5 wiring in some locations • Hacking internally by the public. • Outdated peripherals no maintenance • Theft because the camera and security systems is not up to date. • Inventory of Equipment is not complete.