Officer Josh Lott and Chief Cordell
during his swearing-in ceremony in 2017

WEEKLY REPORT

APRIL 16, 2021

TO: MAYOR FLETCHER AND COUNCIL MEMBERS
FROM: BRYAN LANGLEY, CITY MANAGER

THE CITY OF
BURLESON
TEXAS

MARKETING & COMMUNICATIONS
141 W RENFRO, BURLESON, TX 76028 | (817)426-9622

Weekly Report | April 16, 2021

I. Council Schedule

Meetings

Monday, May 3: City Council Meeting, City Hall Council Chambers. 141 W. Renfro St., 5 p.m. The meeting will be conducted in the council chambers and is also available via live stream, https://www.burlesontx.com/watchlive

Work Session Items/Report & Discussion Items

May 3

- Recognition of Employee of the Quarter for the 1st quarter of 2021. (Staff Presenter: Rick DeOrdio, Human Resources Director)
- Presentation from Chisholm Trail 100 Club to Burleson Police Officers for recent life-saving efforts. (Staff Presenter: Billy Cordell, Police Chief)
- Receive a report, hold a discussion and provide staff direction regarding the relocation of adult softball from Hidden Creek Softball Complex to Chisenhall Sports Complex.(Staff Presenter: Jen Basham, Director of Parks and Recreation)

II. General Information and Status Updates

A. Officer Lott released from hospital

Officer Joshua Lott was released from the hospital Thursday, April 15. Watch his homecoming video. We know a lot of people would like to help Officer Lott and his family. There are several ways you can donate.

- Purchase gift cards to local restaurants, grocery stores, Amazon, etc. You can inter-office or drop them off to Lisa Cauthern at the police station.
- Donate online at www.ct100.org
- You can also give monetary donations in the form of cash or check care of Burleson Police Foundation, 1161 Wilshire Blvd, Burleson, TX 76028.

B. Early Voting

Early Voting for the city's local election begins Monday, April 19 through Tuesday, April 27. All voting will take place in council chambers at 141 W. Renfro St. Council chambers are closed to anything except voting.

During this time, we will be reserving the east parking lot adjacent to City Hall for residents that are here to vote. As such, this parking lot will not be available to employees during this time. The other lots around City Hall will continue to be accessible as usual.

C. Renfro Median Trees

The Parks Department performed pruning services to resolve concerns of trees protruding onto roadway and will continue to monitor the trees for future maintenance as they mature.

D. Feel Good Friday

We recently posted about reversing litter in Burleson and were thrilled to learn that STEAM Middle School students took on the challenge of picking up ten items of litter on Tuesdays.

 Original post from Instagram:

"*City of Burleson is asking for some help with curbing littering and STEAM Middle School students are all in! After a long day of testing, it was nice to get outside & stretch our legs while doing something good for the environment. Everyone do their part to keep Burleson beautiful! #TenOnTuesday*"

Do you have a Feel Good Friday story you'd like us to share? Send us an email.

E. **BRiCk Basketball Courts**
The basketball courts at the BRiCk will be re-opening on Monday, April 19, 2021. This decision was discussed with and approved by Dr. Martin. All open play and league play will resume after participants have signed a COVID-19 assumption of risk waiver.

F. **Animal Control Appreciation Week**
April 11 - 17, 2021, is Animal Control Appreciation Week. To celebrate, social media posts have been shared over the past week highlighting each of the Burleson Animal Shelter staff members. They are a vital part of the community and the City of Burleson is thankful for their dedication to the homeless animals of Burleson.

Visit the Burleson Animal Shelter Facebook page to see the individual posts and to show your support for their service.

G. **ERP Upgrade – Needs Assessment**
In January 2021, city council approved an agreement with Sciens, LLC to assist the city with upgrading its enterprise resource planning (ERP) software. The city's ERP software, which handles functions such as financials, HR/payroll, utility billing, development services, and work orders and asset management, is over twenty years old and is becoming obsolete. Sciens has completed an in-depth needs assessment which included a survey of city staff and meeting with key staff from city departments to determine where the current system in working and not working. Sciens' made the following overall findings:

- **The city's current ERP (HTE) lacks modern functionality.** The current system does not provide an intuitive user interface, reports do not provide useful and timely financial management information, and users require complex tools to perform data extraction.
- **Lack of end user training.** During interviews with end users, many expressed the lack of overall training with the system. As staff with a strong knowledge base leave the City, remaining staff are left to figure it out on their own. This lack of system training has led to manual workarounds in the departments and overall gaps of knowledge as to what the system is functionally capable of.
- **Lack of workflow automation causing manual business practices.** Due to the lack of workflow automation within the system, City staff are forced to manually conduct business processes outside the HTE system through the use of paper, spreadsheets and other 3rd party peripheral applications which often requires reentry back into HTE. This greatly reduces the efficiency of staff time and resources in multiple departments. When considering the effects of a new ERP system, it should result in slowing staffing increases but will not result in overall staffing decreases.

Based on the findings, Sciens made the following recommendations.

- **Implement a New Integrated ERP System.** In order to meet the overall functional needs for the operational departments, as well as address the system limitations, the City should implement a new integrated Commercial off the Shelf (COTS) based ERP system. In order to streamline the workflow, separate applications will need to integrate with the ERP system to provide other necessary capabilities. For Burleson, it is recommended that a COTS solution is pursued over customization in order to reduce costs, simplify implementation and leverage industry best practices. COTS would be the best approach whether the City pursues a single system or multiple systems to fulfill municipal ERP functionality.
- **Limit the Number of Systems in the Solution.** The City needs to consider the potential costs and risks with implementing and maintaining a best-of-breed, multiple system solution. While no single vendor will be able to provide a comprehensive solution, limiting the number of systems will address the desire for best departmental functionality while minimizing the number of integration points and improving dataflow between the systems. Since the new ERP solution will be the main workflow driver and integrator, the City should consider purchasing a solution set which allows for integration of business processes by minimizing systems/vendors, but also delivers modern functionality, automated document routing, and field-based mobility reporting.
- **Focus on Modernizing the ERP and then Data Integration.** The current applications environment is highly manual. The focus during the next 3-5 years should be on modernizing this system, streamlining and automating functions, and stabilizing this new work environment. Subsequent to this, the City should focus on integration to enable data warehousing, dashboarding across systems, predictive analytics and special analyses.
- **Consider Additional Functional and Technical Resources.** It is important to note that some, limited applications development resources will be needed in an architecture dominated by commercial, off-the-shelf (COTS) applications; these systems will meet most, but not all of the specific functional systems needs of the City. To close these gaps, typically in areas such as GIS, document search, integrated web applications, and systems interfaces, applications development will be needed. The City will need to consider these areas and add additional technical staff to meet these new needs.
- **Develop a Risk Mitigation Plan.** The risk associated with an ERP implementation should be mitigated through a comprehensive ERP system support strategy that includes strong project management and dedicated ongoing support.

The full report from Sciens is attached. Based on Sciens' recommendations, staff is proceeding to drafting a request for proposal (RFP) for new ERP software. After receiving the proposals from potential vendors, staff will go through an in-depth demo process with selected finalists. Staff plans to bring a final contract with a selected vendor for city council consideration in September or October 2021. The FY 2022 budget is being prepared to accommodate a new ERP system. Staff will provide updates throughout the process via the Friday Report.

III. <u>Upcoming Road Construction/Closures</u>

UPCOMING ROAD CONSTRUCTION / CLOSURES			
Projects & Limits	**Current Status**	**Traffic Affected**	**Estimated Completion**
Turkey Peak Ground Storage Tank Construction & Brushy Mound Tank Demolition at existing City Facilities	General Contractor is at both Turkey Peak and Brushy Mound Sites.	Intermittent construction traffic to and from both sites. Anticipated Routes include: NW Renfro, SW Brushy Mound Rd, SW Alsbury Blvd, NW Summercrest Blvd, Nicole Dr & NW Jayellen Ave.	Fall 2021
Fire Station #16	Work on building at finish-out stage.	None anticipated	
Elk Drive Pedestrian Mobility	Awaiting remaining handrail delivery this week.	None anticipated	May 2021
Irene/Gardens Safe Routes to School	Construction underway	Outside lanes of Gardens, Irene, Gregory & Johnson Ave will be closed in areas of construction. Closures to move with construction progress	November 2021
SH174 (Wilshire) Landscape Enhancements	Construction scheduled to begin week of April 12. Flashing message boards are in place.	Construction will require temporary daytime lane closures as necessary. These closures will only affect the inside lanes. Remaining lanes, including left-turn lanes, will always remain open.	July 2021

IV. <u>Events</u>
- **Earth Day Celebration**
  April 22, 7:00 p.m. at Centennial Park
- **Drug Take Back Event**
  April 24, 10 a.m. - 2 p.m. in the Wal-Mart Supercenter parking lot, 951 SW Wilshire
- **Tiny Tots Triathlon**
  April 24, 1:00 p.m. at the BRiCk

- **BRiCk Open House**
  April 26, All day event starting at 8 a.m. at the BRiCk
- **Live Music Under the Stars**
  April 30, 6 – 8:30 p.m. at Russell Farm Art Center
- **Texas Heritage Festival**
  May 1, 9 a.m. - 4 p.m. at Russell Farm Art Center
- **National Fitness Day**
  May 1, 9:30 – 11:30 a.m. at the BRiCk

V. <u>Attachments</u>

City of Burleson

ERP Assessment & Plan

Assessment Date: April 9th, 2021

Table of Contents

Executive Summary

Introduction

The City of Burleson is undertaking the process of replacing its current CentralSquare Public Administration (Superion, Naviline, HTE) system. Recently, the City hired Sciens Consulting to assist them through this process. This ERP Assessment & Plan is the first deliverable in that process, documenting many of the decisions the City has made to make this transition a success.

Project Background and Objectives

The City acquired the HTE system over two decades ago. As the City grew, HTE's shortcomings were patched through manual workarounds and semi-automated methods using 3rd party peripheral systems. To address some of these gaps in HTE, the City recently acquired Cartegraph, a work order and asset management application, which will provide more modern functionality for Public Works' business processes. The legacy HTE system continues to fall short of the City's growing needs, especially in the areas of reporting, analytics, GIS integration, and mobility.

This document contains the snapshot of the current environment as well as the Plan of Action going forward with HTE's replacement.

Modern System, Improved Functionality to City Staff

City operations will benefit from the implementation of a modern ERP system in two key ways: by reducing the amount of data reentry currently performed by staff; and, by providing real-time information to City staff as they make decisions.

This will enable staff and City management to make better, more informed decisions that have impacts on the entire City. With more meaningful data in its hands, the City will be able to:
- Have better financial reporting capabilities and accuracy
- Make real time decisions through the use of intuitive dashboards
- Improve service the Citizens and provide transparency on the City's website.

ERP Assessment & Plan Approach

This Plan is the result of a thorough data gathering and interview process. This process occurred in three stages, described below.

1. Data Gathering – Collect information about the current environment
2. Interviews – Meetings with Departments to determine how well the current system(s) support the automation of processes
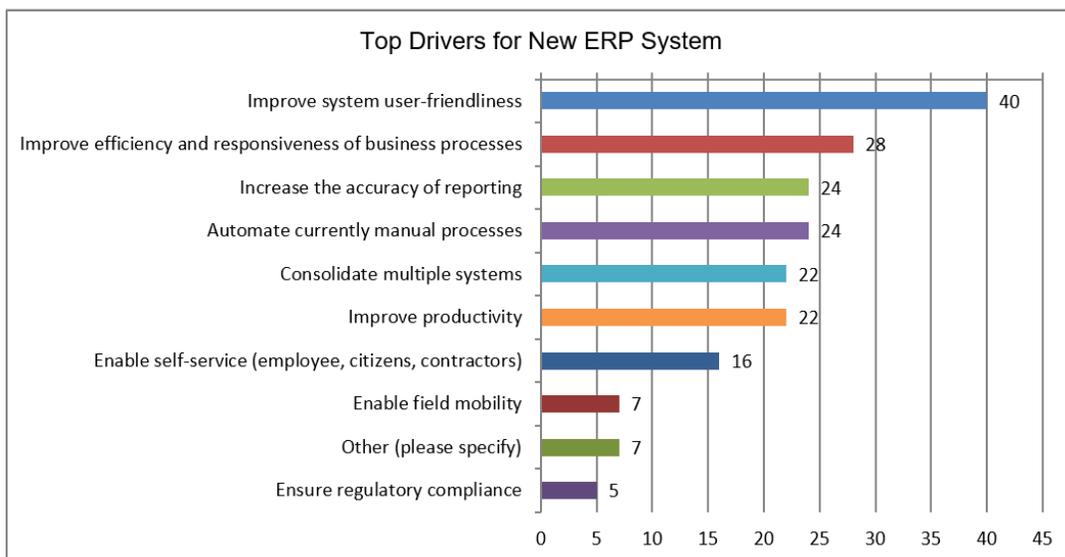3. Plan Development – Development of this Plan and review with the City.

Key Findings and Recommendations

The City of Burleson's application architecture is characterized by multiple, disparate applications for most City functions with no integration between these systems. The primary administrative system is the HTE System which provides the main functionality for the City's ERP system architecture.

Some of the main **limitations** of the current HTE system are identified below.

- **A Lack of Modern Functionality.** The current system does not provide an intuitive user interface, reports do not provide useful and timely financial management information, and users require complex tools to perform data extraction.

- **A Lack of End User Training.** During interviews with end users, many expressed the lack of overall training with the system. As staff with a strong knowledge base leave the City, remaining staff are left to figure it out on their own. This lack of system training has led to manual workarounds in the departments and overall gaps of knowledge as to what the system is functionally capable of.

- **A Lack of Workflow Automation Causing Manual Business Processes.** Due to the lack of workflow automation within the system, City staff are forced to manually conduct business processes outside the HTE system through the use of paper, spreadsheets and other 3rd party peripheral applications which often requires reentry back into HTE. This greatly reduces the efficiency of staff time and resources in multiple departments. When considering the effects of a new ERP system, it should result in slowing staffing increases but will not result in overall staffing decreases.

In addition, Sciens asked City staff to identify the top drivers for selecting a new ERP system. Most respondents expressed that they would like to see improved user-friendliness (easier to use), more automation with business processes, and more intuitive reporting capabilities. Their responses are shown below.

Top Drivers for New ERP System

Driver	Value
Improve system user-friendliness	40
Improve efficiency and responsiveness of business processes	28
Increase the accuracy of reporting	24
Automate currently manual processes	24
Consolidate multiple systems	22
Improve productivity	22
Enable self-service (employee, citizens, contractors)	16
Enable field mobility	7
Other (please specify)	7
Ensure regulatory compliance	5

Based on the Assessment, staying with the current ERP system presents the City with a higher level of risk than procuring a replacement. HTE is limited in functionality when compared with other current ERP systems available from the market today. With this in mind, Sciens **recommends**:

- **Implement a New Integrated ERP System.** In order to meet the overall functional needs for the operational departments, as well as address the system limitations, the City should implement a new integrated Commercial off the Shelf (COTS) based ERP system. In order to streamline the workflow, separate applications will need to integrate with the ERP system to provide other necessary capabilities.

   For Burleson, it is recommended that a COTS solution is pursued over customization in order to reduce costs, simplify implementation and leverage industry best practices. COTS would be the best approach whether the City pursues a single system or multiple systems to fulfill municipal ERP functionality.

- **Limit the Number of Systems in the Solution.** The City needs to consider the potential costs and risks with implementing and maintaining a best-of-breed, multiple system solution. While no single vendor will be able to provide a comprehensive solution, limiting the number of systems will address the desire for best departmental functionality while minimizing the number of integration points and improving dataflow between the systems. Since the new ERP solution will be the main workflow driver and integrator, the City should consider purchasing a solution set which allows for integration of business processes by minimizing systems/vendors, but also delivers modern functionality, automated document routing, and field-based mobility reporting.

- **Focus on Modernizing the ERP and then Data Integration.** The current applications environment is highly manual. The focus during the next 3-5 years should be on modernizing this system, streamlining and automating functions, and stabilizing this new work environment. Subsequent to this, the City should focus on integration to enable data warehousing, dashboarding across systems, predictive analytics and special analyses.

- **Consider Additional Functional and Technical Resources.** It is important to note that some, limited applications development resources will be needed in an architecture dominated by commercial, off-the-shelf (COTS) applications; these systems will meet most, but not all of the specific functional systems needs of the City. To close these gaps, typically in areas such as GIS, document search, integrated web applications, and systems interfaces, applications development will be needed. The City will need to consider these areas and add additional technical staff to meet these new needs.

- **Develop a Risk Mitigation Plan.** The risk associated with an ERP implementation should be mitigated through a comprehensive ERP system support strategy that includes strong project management and dedicated ongoing support.

Projected Timeline and Budget

It is expected that selection of a new ERP system will take the City the remainder of the fiscal year; if contract negotiations with the chosen vendor are relatively quick, implementation could begin as early as January 2022. There are four major modules of the ERP system, each taking roughly 12 months to implement. With advanced preparation by the City on such complexities as the Chart of Accounts, and providing for overlap between module implementations, complete conversion from the existing systems to future systems should be possible within 24-36 months.

The 5-year Total Cost, including implementation and annual maintenance, is estimated to be approximately $3.28 million for an On-Premises solution and $2.77 million for a SaaS Cloud solution. A breakdown of the budget is shown in the Plan section, page 57.

Project Background

Introduction

This section describes the City of Burleson and its objectives for replacing its current HTE system with a comprehensive ERP solution.

City Background

Located on the southern edge of the thriving Dallas-Fort Worth metroplex, the City of Burleson has an estimated population of 48,950 residents in a land mass of 28 square miles. Burleson has been progressive in attracting businesses for economic development to diversify its tax base, as well as establishing development agreements within its extraterritorial jurisdiction to manage growth strategically outside its current borders.

The City of Burleson's family-oriented environment, outstanding schools, plentiful and affordable land, and rolling hills have made it a desirable community to live, work, and play. Burleson residents have placed a high value on nature and recreation with over twenty parks encompassing over 550 acres. The school districts serving Burleson consistently outperform state and national averages in college entrance exam scores, and its quality of life is further enhanced by a very low crime rate.
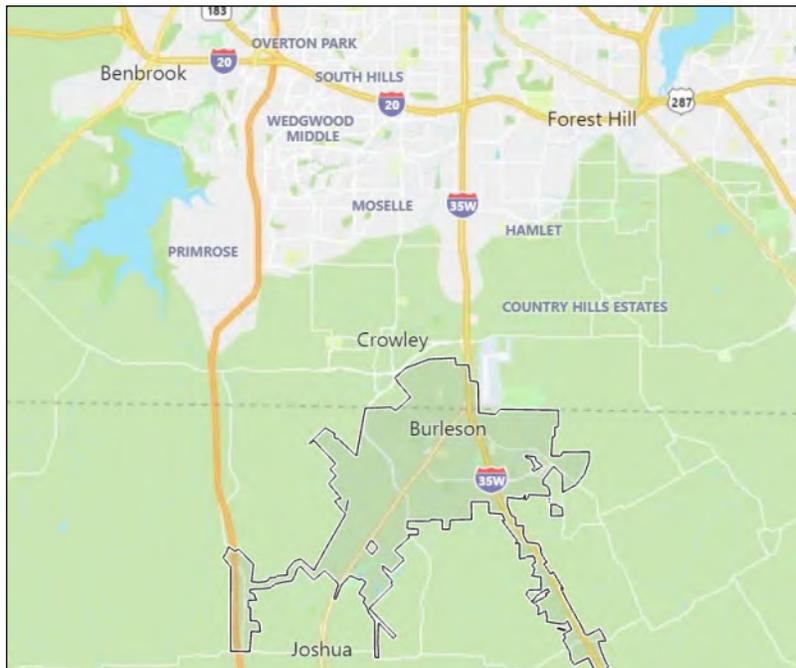
Organization

The City of Burleson operates under a council-city manager form of government. As established in the 1969 City Charter, the mayor and City Council comprise the legislative branch of the City government. The City Council acts on ordinances and resolutions, approves the annual tax rate and operating budget, and generally makes policy for the overall operation of the City. Citizens are represented on the City Council by the mayor and 6 council members, all elected at large to serve 3-year terms.

Shown below is the organizational chart for the City of Burleson.
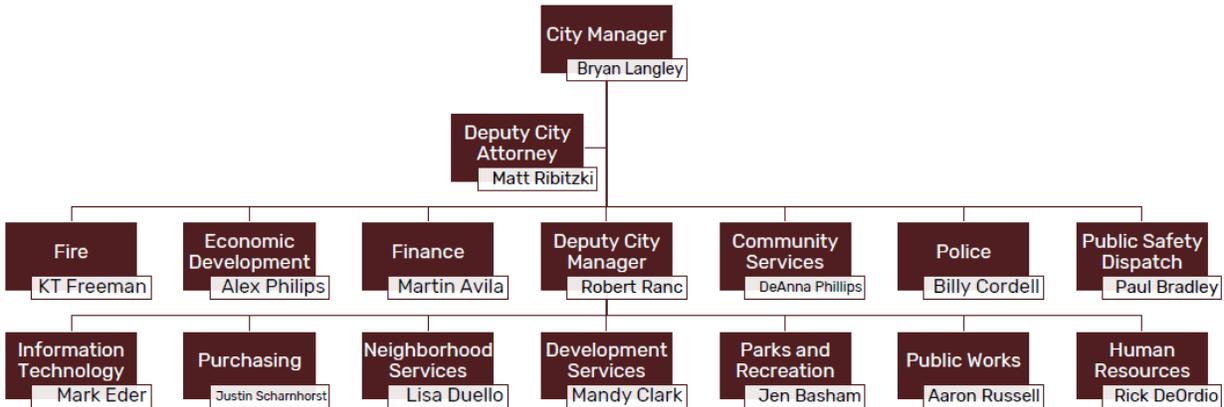
Revised February 2021

The City Manager, appointed by the City Council, serves as the chief administrative official of the City and is responsible for the overall operation of the City Administration. He manages the day-to-day operations of the City, prepares the annual budget for City Council approval, and oversees the City's 360 full-time employees.

City Services

The City provides a full range of services to its citizens, including the following:

- 24-Hour Police protection
- 24-Hour Fire protection
- Municipal Court
- Maintenance of city traffic, streets, and lighting
- Building inspection and permitting services
- Code enforcement services
- Development Services
- Public Works
- Parks & Recreations
- Water, stormwater, sewer and solid waste services.

ERP Affected Departments

Finance
The Finance Department is the administrative arm of the City's financial operation. The department is responsible for maintaining a governmental accounting system that presents accurately, and with full disclosure, the financial operations of the funds and account groups of the City in conformity with generally accepted accounting principles. Utilities (UB) is also under Finance.

Human Resources
The Human Resources Department (HR) provides overall policy direction on human resource management issues and administrative support functions related to the management of employees for all City departments. The key functions this department is responsible for include labor law compliance, recruiting, staff training and development, record keeping and employee relations.

Public Works
The Public Works Department is comprised of 5 divisions: Administration, Equipment Services, Solid Waste, Street Maintenance, Water and Wastewater, and Engineering. This department provides the following services: performs preventive maintenance to the infrastructure; maintains a safe, adequate, and reliable supply of water; supplies wastewater, streets, drainage, and traffic control services; handles maintenance of city vehicles and equipment; oversees solid waste collection.

Development Services
The Development Services department is responsible for maintaining the City's Comprehensive Plan, by managing the Zoning and Development application process, upholding the standards of the City, and providing excellent customer service to the development community and the Citizens of Burleson. This department is comprised of: Building Permits & Inspections and Planning & Zoning.

Neighborhood Services
Neighborhood Services is comprised of the following 3 divisions: Animal Services, Code Compliance, and Environmental Services. The Animal Services Division provides animal care and control services for residents living within the city limits of Burleson and animal adoption services to the greater Burleson community. The Code Compliance Division protects property values and improves the health, safety, and welfare of citizens by obtaining compliance with nuisance, building, zoning, land development, environmental, and other codes and ordinances through effective, expeditious, and equitable enforcement of the codes. The Environmental Services Division is responsible for protecting the health and safety of the public and the environment.

Project Objectives

The objectives of this project include procuring a system that will:

- Encourage new process development
- Reduce/eliminate redundant data entry
- Automate and integrate functions currently requiring manual intervention
- Automating manual processes to reduce staff workloads
- Moving to a system with tight integration between field electronic data collection and the backend database
- Improved data analysis and reporting through easy to use, customizable reporting tools and modern analytical toolsets.

ERP Assessment & Plan Approach

This Plan is the result of a thorough ERP assessment process. This process occurred in three stages, described below.

1. Data Gathering – Collecting information about the current ERP environment, including technical and end user satisfaction
2. Interviews – Meetings with Departments to determine how well the current system(s) support the automation of processes
3. Plan Development – Development of this Plan and review with the City.

Current Environment

Introduction

The information in this section looks at the overall Strengths, Weaknesses, Opportunities, and Threats of the current environment from several perspectives: a review of the existing technical environment, end user satisfaction, and key process review of the current permitting system.

Current Applications Architecture

The City's application architecture is characterized by a multitude of systems and manual processes to support its business functions. The applications architecture diagram below shows CentralSquare Public Administration (HTE) as the main system linking the other peripheral systems on the outside. Many of these linkages are manual inputs or uploads from City staff, which greatly limits efficiency and effectiveness, and the timely availability of information.

City of Burleson
ERP Applications Interaction Diagram – Current State
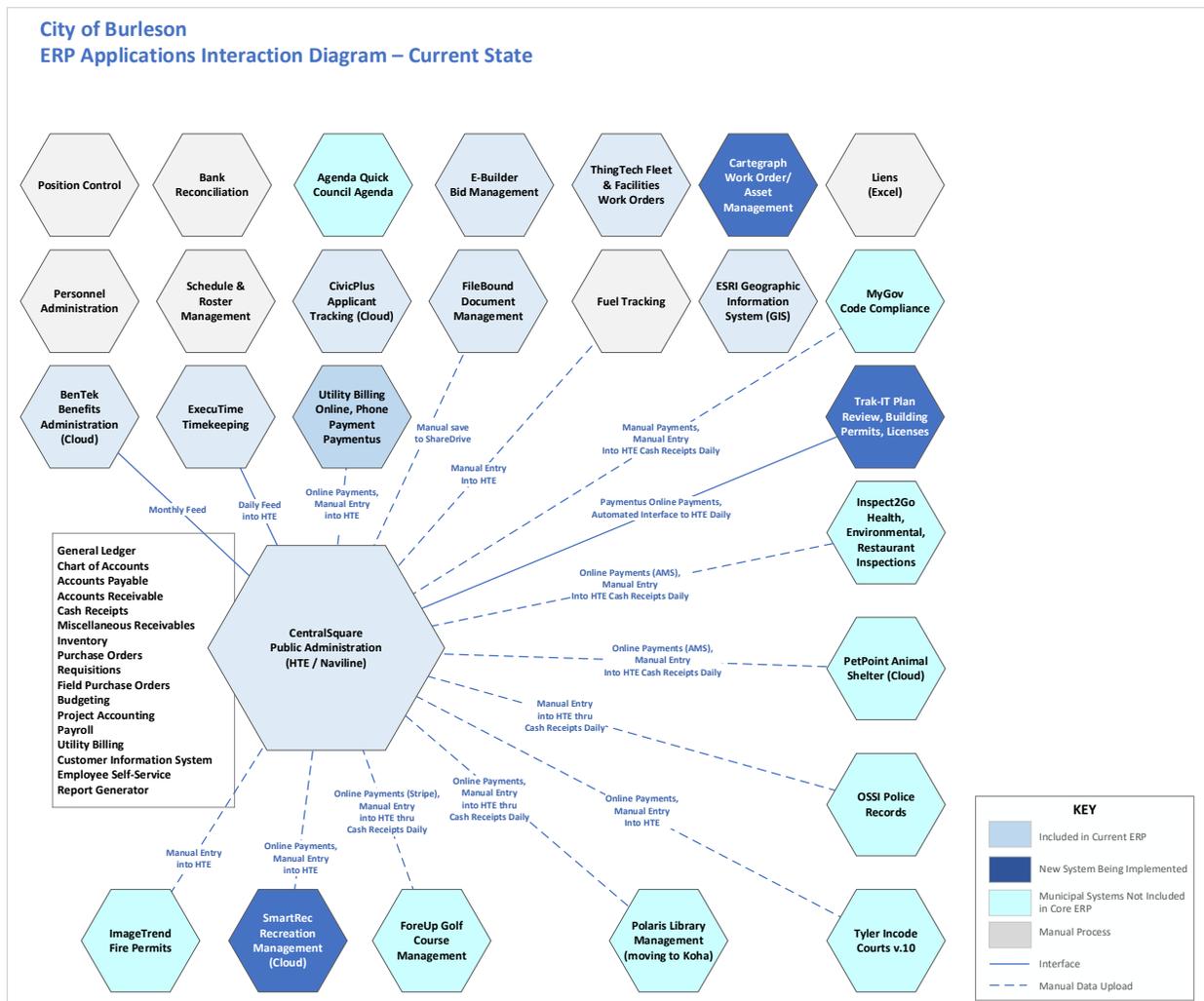
Missing Functionality

Even though HTE does most of the core functions the City needs, it is missing the following functionality and therefore requires manual workflow (e.g., Word, Excel) in order to perform these functions:

- Bank Reconciliation (Finance)
- Position Control (HR)
- Personnel Administration (HR)
- Schedule and Roster Management (HR)
- Fuel Tracking (Public Works)
- Dashboarding and Reporting

Payment Processing

Each peripheral system (e.g., ForeUp Golf Course Management, SmartRec, Inspect2Go) has its own payment portal and therefore payment processor it uses. These different payment processors are talking to the HTE system via manual uploads, mostly through a .CSV file. In many cases, this information needs to be manually entered into HTE because the payment data is not compatible for automatic entry into the HTE system. While the level of effort for a few transactions is negligible, this process does work when there are many transactions; this lack of overall integration increases the risk of data entry error, which affects the accuracy of information available in the Finance and the other operational systems.

Electronic Document Management

The electronic document management system (EDMS) utilized by the City is FileBound. It houses the digitally scanned documents from the operational departments and is an integral part of the department's daily workflows.

Currently, FileBound is not integrated with any other core application and therefore does not automatically route or store documents from these applications (e.g., HTE). Document archival requires manual processes where departments upload and save files directly to FileBound. This manual process creates more unnecessary workloads for the City staff and is prone to mistakes as files can be labeled several different ways.

Going forward with a new ERP system, the document management component should be tightly integrated with the system in order to provide an automated routing process for documents that will be uploaded to the financial system. Most of today's ERP systems feature embedded document management capabilities that is fully integrated into the workflow of the departments. The City will need to consider whether to 1) keep FileBound as the EDMS and require an active interface to provide automated routing or 2) utilize the new system's EDMS and use it as the main workflow driver in the City. The first option presents a higher risk of failure as this interface will need to be actively maintained by IT. The second option will be more costly, but the user experience will be more streamlined while documents will automatically be saved and labeled with much less risk of error.

Current Applications List

The current ERP applications and interfaces the City uses are shown below along with the preliminary migration plan to the new ERP.

*Legend for Current Applications		
Legend Code		Description
R	Replacement	The City is intending on replacing this application with the selected solution.
C	Consider	The City is considering replacing this application with the selected solution, based on the strength of the finalist vendor offering and cost / benefit of the replacement module.
M	Maintain	The City is intending on retaining the application, not replacing it thru this effort.
I	Interface	If the City is intending on maintaining the application, interface/integrate it with the selected solution. If the City is considering replacement, the Vendor may provide a system that is already fully integrated.
E	Export	The expected cost to interface this application will not be justifiable; looking to allow for an export of data from the existing system into the new ERP system.

Current ERP Application/ Interface	Application(s)	Departmental Owner	Preliminary Migration Plan R / C / M	I / E
General Ledger	Central Square	Finance	R	
Chart of Accounts	Central Square	Finance	R	
Bank Reconciliation	None	Finance	R	
Accounts Payable	Central Square	Finance	R	
Accounts Receivable	Central Square	Finance	R	
Cash Receipts	Central Square	Finance	R	
Miscellaneous Receivables	Central Square	Finance	R	
Inventory	Central Square	Finance	R	
Purchase Orders	Central Square	Finance	R	
Requisitions	Central Square	Finance	R	
Field Purchase Orders	Central Square	Finance	R	
Online Bill Payment	Central Square moving to Paymentus	Finance	M	
Budgeting	Central Square	Finance	R	
Project Accounting	Central Square	Finance	R	
Timekeeping	ExecuTime	Finance	C	I
Payroll	Central Square	Finance	R	
Personnel	None	Human Resources	R	
Position Control	None	Human Resources	R	
Benefit Administration	BenTek	Human Resources	C	I
Utility Billing	Central Square	Utility Customer Service	R	
Customer Information System	Central Square	Utility Customer Service	R	

Current ERP Application/ Interface	Application(s)	Departmental Owner	Preliminary Migration Plan R / C / M	I / E
Capital Projects Management	Excel moving to E-Builder	Public Works/Engineering	M	I
Plan Review	Trak-IT	Development Services	C	--
Building Permits	Trak-IT	Development Services	C	I
Occupational Licenses	Trak-IT	Development Services	C	
Restaurant Inspections	Inspect 2 Go	Neighborhood Services	M	E
Animal Services Management	Pet Point	Neighborhood Services	M	E
Code Compliance	MyGov	Neighborhood Services	C	
Public Works Work Orders/ Asset Management	In-house developed moving to Cartegraph	Public Works	M	
Fleet Management	ThingTech	Public Works	C	
Facilities	ThingTech moving to Cartegraph	Public Works	M	
Document Management	FileBound	City Secretary	C	I
GIS	ESRI	IT	M	
Council Agenda	Agenda Quick	City Manager's Office	M	
Fire Records Management	Image Trend	Fire	M	
Scheduling, Roster Management	Looking at TeleStaff (Kronos)	Fire	M	
Golf Course Management	ForeUp	Golf Course	M	E
Library Management	Polaris looking at Koha	Library (Communications)	M	E
Municipal Court	Incode 10	Municipal Courts	M	I
Parks Work Orders	None, moving to Cartegraph	Parks & Recreation	M	
Recreation Activities	RecTrac looking at SmartRec	Parks & Recreation	M	I
Alarm Registration/Billing	ASAP	Police	M	E
Police Records	Central Square OSSI	Police	M	E

Shortcomings of Legacy Enterprise Resource Planning Systems

The City's current Enterprise Resource Planning (ERP) system, Superion SunGard Public Sector (HTE) was purchased by the City several years ago. At the time, the software represented the best the marketplace had to offer, a so-called "City in a box" because all the required functionality a City needed was provided in a single system.

But the vendor's capabilities and investment in its technology were quickly outpaced by the needs of municipalities. While the original systems performed Finance, Accounting, Payroll and, to a lesser extent, Human Resource capabilities, cities were demanding more comprehensive functionality. Municipal ERPs grew to encompass most core components of a City's operation, specifically Utility Billing, Public Works functions of asset management (i.e., tracking and maintenance management), and Community Development functions of plan review management, business licensing, building permits and inspections, and code enforcement.

Legacy ERP systems from this time period were considered to be data rich yet information poor; while a good amount of data was collected, it was difficult to turn this into actionable information. By the time reports were produced, the information was out-of-date and unusable for making timely decisions.

Within a decade, new software companies were popping up with niche systems to close gaps in the software's functionality. These gaps included:

- The need for data re-entry in multiple systems
- Limited and often no mobile capability
- Inability to manage workflow for routing of information and approvals
- Limited and often no employee or citizen self-service capability.

To close some of these gaps, the City turned to several of these systems, including Microsoft Excel, Cartegraph, FileBound, TRAKiT, Incode Courts, and Executime.

While there has been limited consolidation in the municipal ERP market in the intervening years, the market remains relatively unconsolidated and the burden of integration remains with cities.

City Staff Satisfaction eSurvey

There are many reasons that cities choose to make a change of ERP systems. These can include improved efficiency, lower costs, more effective service ability, field mobility enablement, and self-service enablement for citizens and employees.

An electronic survey was conducted with the City's end users in February 2021. The survey asked questions surrounding the satisfaction with end users around the current ERP systems. There were 121 responses from the City's software users, broken down by department as shown in the diagram on the next page. In general, there was significant participation by departments with the largest populations.

Number of Respondents to Satisfaction Survey

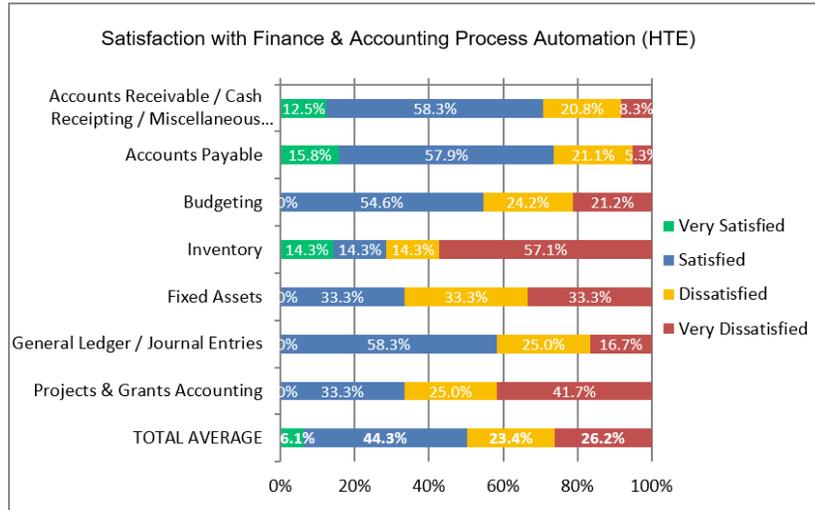| Department	Number of Respondents
Animal Services	2
City Manager's Office	3
City Secretary	2
Communications	3
Development Services - Administration	1
Development Services - Building Permits & Inspection	4
Development Services - Planning & Zoning	3
Economic Development	2
Finance	9
Fire Department - Emergency Services	12
Human Resources	5
Information Technology	4
Library	5
Municipal Court	3
Neighborhood Services - Administration	2
Neighborhood Services - Code Compliance	2
Neighborhood Services - Environmental Services	3
Other	3
Parks & Recreation - Administration	3
Parks & Recreation - Burleson Recreation Center	8
Parks & Recreation - Hidden Creek Golf Course	4
Parks & Recreation - Parks Maintenance	3
Police Department	13
Public Safety Communications	3
Public Works - Administration	4
Public Works - Engineering Services	5
Public Works - Street Maintenance	1
Public Works - Water & Wastewater	2
Purchasing	1
Senior Center	1
Utility Customer Service	5

Number of Respondents (121 Total)

Interviews were also conducted with the Departments' management and subject matter experts. The surveys were made available to all City staff end users and are meant to either corroborate or challenge those findings from the interviews. End users were asked about the software's reliability, user friendliness, and the ability to meet functional requirements.

As presented in the results on the next few pages, end users have an average to below average satisfaction (65.7%) with the core HTE system, while outside supporting applications have a higher level of satisfaction. To put this in perspective, end users view HTE as the tool that management has provided them to get their jobs done. While they have a below average opinion of the software itself, as was reinforced during the interview process, they are indicating that they can get their jobs done as defined today. They are not envisioning how their jobs could improve or the work streamlined because the tool available to them is not capable of functionality like streamlined workflow, dashboarding, or intuitive reporting .

While some users appear to have high levels of satisfaction, department interviews revealed otherwise. Some users have gotten used to the way HTE works and it has become second nature to work in this manually intensive, work-around environment (e.g., re-entering of data, limited reporting and analytics). More details on the functional gaps in the HTE system can be found in the interview summary notes.

Finance and Accounting

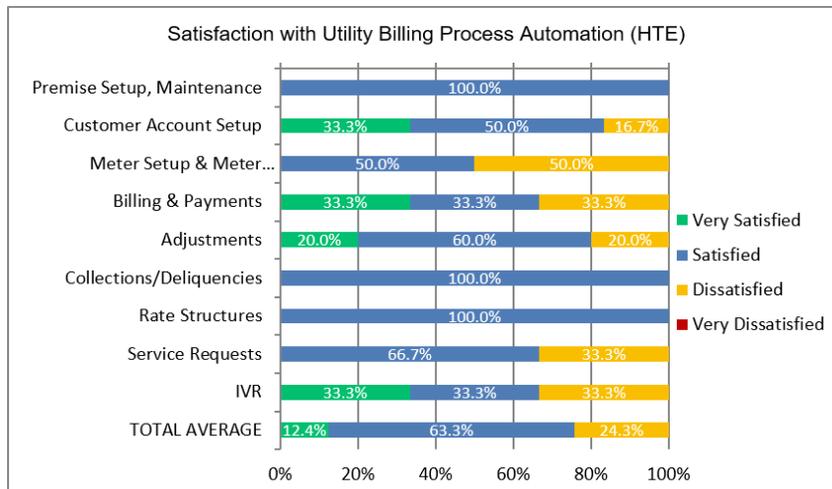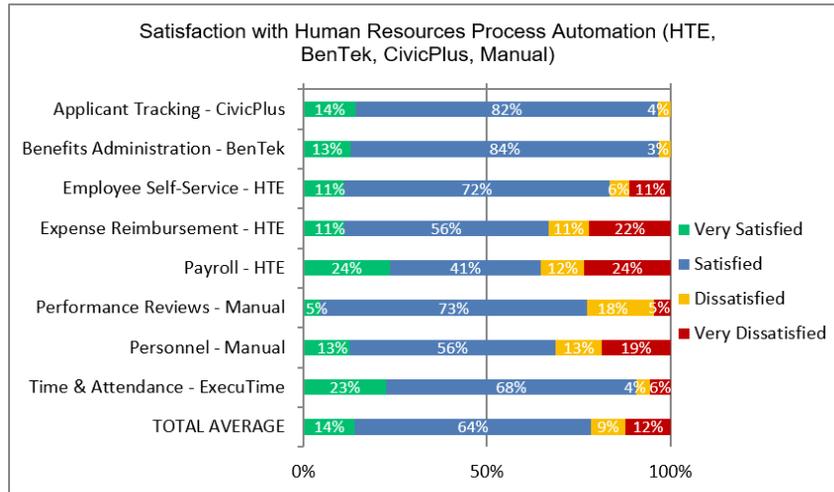**Satisfaction with Finance & Accounting Process Automation (HTE)**

	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied
Accounts Receivable / Cash Receipting / Miscellaneous...	12.5%	58.3%	20.8%	8.3%
Accounts Payable	15.8%	57.9%	21.1%	5.3%
Budgeting	0%	54.6%	24.2%	21.2%
Inventory	14.3%	14.3%	14.3%	57.1%
Fixed Assets	0%	33.3%	33.3%	33.3%
General Ledger / Journal Entries	0%	58.3%	25.0%	16.7%
Projects & Grants Accounting	0%	33.3%	25.0%	41.7%
TOTAL AVERAGE	6.1%	44.3%	23.4%	26.2%

Purchasing

Satisfaction with Purchasing Process Automation (HTE, Bonfire)

	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied
Purchasing Workflow - HTE	4.4%	47.8%	26.1%	21.7%
Requisitions/Purchase Orders - HTE	9.4%	62.5%	15.6%	12.5%
Bid Management - Bonfire	36.4%	54.6%	9.1%	
Vendor Management - HTE	7.1%	28.6%	42.9%	21.4%
Contracts Management - Bonfire	33.3%	41.7%	16.7%	8.3%
TOTAL AVERAGE	18.1%	47.0%	22.1%	12.8%

Utility Billing

Satisfaction with Utility Billing Process Automation (HTE)

	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied
Premise Setup, Maintenance		100.0%		
Customer Account Setup	33.3%	50.0%	16.7%	
Meter Setup & Meter...		50.0%	50.0%	
Billing & Payments	33.3%	33.3%	33.3%	
Adjustments	20.0%	60.0%	20.0%	
Collections/Deliquencies		100.0%		
Rate Structures		100.0%		
Service Requests		66.7%	33.3%	
IVR	33.3%	33.3%	33.3%	
TOTAL AVERAGE	12.4%	63.3%	24.3%	

Human Resources

Satisfaction with Human Resources Process Automation (HTE, BenTek, CivicPlus, Manual)

Neighborhood Services

Satisfaction with Neighborhood Services Process Automation (MyGov, Pet Point, Inspect2Go)

Public Works

Satisfaction with Public Works Process Automation (ThingTech)

Other Supporting Systems/Functionality

Satisfaction with Other Supporting Capabilities

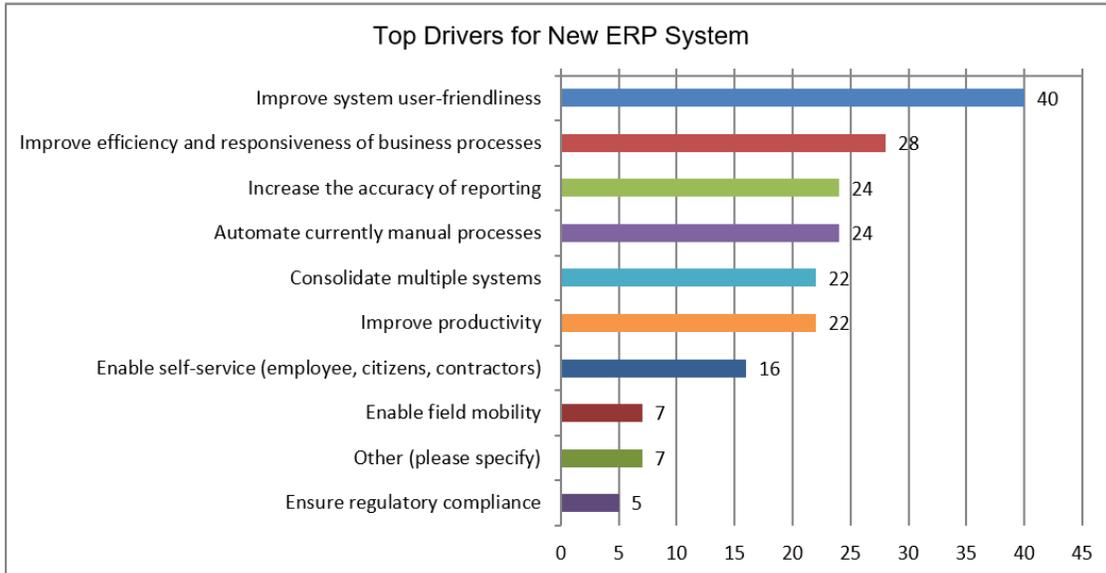|	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied	Does Not Exist
Land Management/GIS - ESRI	15.4%	76.9%	7.7%		
Electronic Document Management - Filebound		66.7%		22.2%	11.1%
Dashboards		27.3%	18.2%		54.6%
Easy, Intuitive Reporting			50.0%	16.7%	33.3%
Citizen Self-Service		50.0%			50.0%
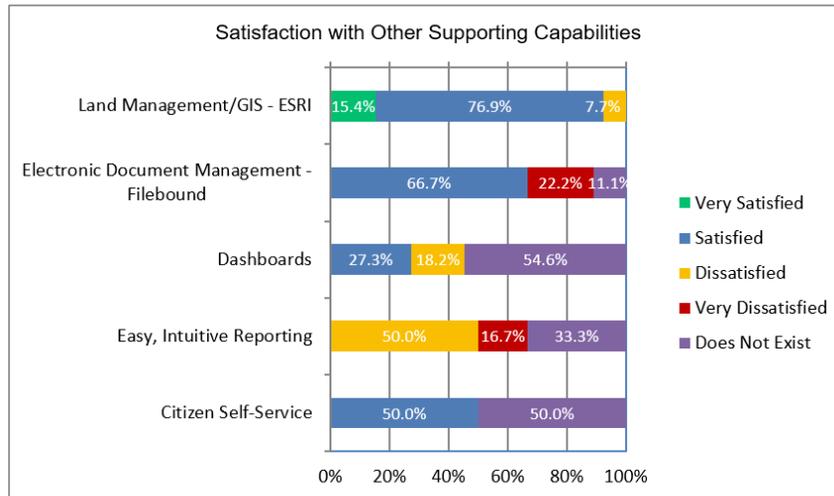
Most/Least Liked Aspects of the Current System

End users were asked to identify the areas they most and least liked with the current system. The top responses in each category are shown below.

Most Liked	Least Liked
▪ Familiarity of the system that has been used by the City for several years ▪ Knowledge of system by current staff ▪ Other applications have added value by increasing functionality throughout the departments ▪ MyGov user friendly, good data collecting and reporting	▪ Functionality is dated ▪ Difficulty to Use (lack of an intuitive, graphical user interface) ▪ System is very slow to load ▪ Lack of user friendly reporting / difficult to find information ▪ Manual re-entry of information as a result of system deficiencies ▪ Lack of integration with other systems increases staff workloads ▪ Lack of GIS integration ▪ Lack of Mobility

Top Drivers for Choosing a New ERP

End users were also asked to identify the top drivers they wanted to see in the new ERP. The responses are shown below.

Top Drivers for New ERP System

Driver	Value
Improve system user-friendliness	40
Improve efficiency and responsiveness of business processes	28
Increase the accuracy of reporting	24
Automate currently manual processes	24
Consolidate multiple systems	22
Improve productivity	22
Enable self-service (employee, citizens, contractors)	16
Enable field mobility	7
Other (please specify)	7
Ensure regulatory compliance	5

End User Department Interviews

In addition to the eSurvey, functional reviews were conducted with the key user departments to identify issues with the current business process/system in order to determine the shortcomings that need to be resolved through the acquisition of a new ERP system. The results of these interviews are detailed on the following pages.

Process	Application	Notes
City Management		
Top Issues with Current System	HTE	- AS400 is old but safe. Knowledge base very limited. - Have gone 10 years without system training. - Change is past due. Been a want/desire for a while. - Cannot get information or run reports quickly to make decisions. - information is exceedingly difficult to extract, reportable, and make actionable.
Main Goals for Project		- Encourage new process development - Reduce/eliminate redundant data entry - Automate and integrate functions currently requiring manual intervention - Automating manual processes to reduce staff workloads - Moving to a system with tight integration between field electronic data collection and the backend database - Improved data analysis and reporting through easy to use, customizable reporting tools and modern analytical toolsets.
Strategic Direction		- Drive towards departmental self-sufficiency, power users within each of the departments. Distributed system administration capabilities by module. - Better service for less money. - Staff is weighted to data entry because our system is inefficient; empowering our employees with information to do better work. - Increasing citizens' expectations of automated service. Want dashboarding, easy access information for Council. - Current systems are manual, heavily paper-based, forms driven. - Want basic reports easy for everyone, with intuitive reporting for non-standard reporting. - Training is key to success of new system.

Process	Application	Notes
		- Want a pre-configured system. Have had a lot of turnover recently. Staff today is open to changing processes, new configuration.
Finance & Accounting		
Main Needs		- Ease of reporting for the departments – spend a lot of time answering data fetch questions. - Dashboarding. - Interfaces with other critical systems to reduce data reentry.
- Chart of Accounts	July 1998 last update	Chart structure will need to be revised. Lot of funds, accounts. For example, every impact fee is an account. Want to streamline and provide for expansion in the future.
- Journal Entries	Paper to HTE	Enter paper into HTE, run an error report, scan into document imaging system; if we can create it in Excel, we can upload using an HTE template
- Closings & Adjustments	Paper to HTE	Manual process.
- Reports & Queries	HTE, Cognos	Not getting the job done; can print some standard reports. Unable include everything in the same report. Run the Operating Expenses, cannot get all of them. Field size not large enough to hold all info. Try to download the report into Excel, it comes through without headers, etc. More static document. Try to keep it easy on the departments, but it's a lot of work to make that happen. Cognos - User is self-taught and key to data extraction.
Fixed Assets	HTE	Entry and reporting does not do a good job. Does automatic depreciations. Hard to work with multiple funds and balance them.
Projects & Grants	Paper to HTE	Manual process.
- Project Entry	HTE	Engineering sends info (manual forms), create an account, budget adjustment to fund it out of an unallocated project fund.
- Tracking, Reports & Queries	Multiple	Lacking good reporting tools. Engineering using Excel, moving to eBuilder. Want an interface.
Treasury		
- Investment Tracking	Manual	Accrued interest is tracked manually using spreadsheet, allocated across funds.
- Cash Management	Excel	Pooled cash. Balances are inputted into HTE.
Accounts Payable	HTE	Functional. Use FPOs, departments key it in, send to Finance for approval. Every week, print on

Process	Application	Notes
		Thursday, send AFT to bank. Not a lot of reporting required.
Printing		ACOM provides forms for printing of checks, payroll.
General Financial Reporting	Excel	CAFR done through Excel, Cognos, manually. Use Cognos to export data into Excel; have to manually reenter data. Takes a month. Auditors put it together as a CAFR document.
Tax Reporting – 2 counties	HTE	Numbers coming from two different appraisal districts Johnson and Tarrant. Consolidated by Johnson County. Get two reports, have to validate.
Accounts Receivable		
General Accounts Receivable	HTE	Satisfactory for what they use, but dashboarding features would be helpful to see overall view of AR.
Miscellaneous Receivables	HTE	- Create bill, auto generates journal entry, General Ledger to push the journal entry. - Issues with reconciliation; cannot download directly into Excel. Shows like a report, inflexible. - Billing Types: Engineering, Rental, Quarterly (hotel, motel tax), zero-dollar billings, Police Consortium, HR (retiree's insurance payments monthly); few annual billings. - Doing 30+ bills a month. - Payments received elsewhere in Finance.
Collections	HTE	Contact department that requested the invoice to let them know it has not been paid for them to follow up. If no payment, eventually may be written off with requestor's permission.
Point of Sale (POS)	HTE	Court, UB, Golf, Parks, Library. No central cashiering. Will need City to provide the number of POS systems required for RFP.
Online Bill Payments	Multiple	Multiple systems, mostly manual inputs into HTE.
Bank Reconciliation	HTE	- Monthly. - Pull down bank statement from website in Excel. - Pull down report from HTE which does not export into Excel. - Go to Cognos and pull GL activity, move into Excel. - Multiple screens, use Pivot tables for comparisons. - Lookup payment by name, but doesn't always work.

Process	Application	Notes
		- General Reconciliation takes 3 days if everything is good, but can take weeks if research is required.
Utilities		
Premises	HTE	- Permits adds addresses into Land Management in HTE. Moving to new system and will be passing responsibility over to Utilities. - Once premise set up, developer requests the meter from Utilities, set up account for developer, issue work order to Public Works. - PW notes the meter number. - Send it back to Utilities on a piece of paper. - Entered into HTE by Utilities.
Customer Accounts	HTE	- Have to come in or get the application notarized. During COVID, have relaxed this to email an application and picture of driver's license. - Reenter information into HTE. Put it into a tray. Application is audited and then moved into another tray. Scan into document management system (FileBound). - May want to look at a 3rd party credit check and not store vital information.
Meter Setup	HTE	- Enter account, issue initial turn on work order, prints piece of paper and then send them out to Meter Technicians based on date they need to be done. - Three technicians divide them up based on location. Turn on meters. - Turn them into Supervisor, she enters them into the system. (Creates a 2nd work order to fix/replace meter if there's an issue.)
Meter Reading	Neptune	- Neptune radio read system, drive the streets. - Reading time is fairly low. - 18 bill cycles, 5 work orders (meter changes, rereads) per billing cycle.
Rate Structure	HTE	Each year on October 1. Tedious to make changes; different rate for each meter size. Not difficult but a lot of work.
Billing	HTE	- Bill 4 times a month. Read each billing cycle the same day, if possible. Send file to DataProse 2 days before bill printing. - Bill for water, sewer and solid waste. - USAePay over the phone; would like to consolidate into Paymentus.

Process	Application	Notes
		- Need a modern cashiering system for the front desk.
Payments & Collections	HTE	- Paymentus over the phone (IVR). Working on online portal with them to be live by April. - Drop box outside, counter. - Credit card through Click2Gov. - EFTs from the bank.
Delinquency/ID Theft Check	HTE	- Late notices out through Dataprose. - Account doesn't pay; phone call 48 hours before disconnect through Everbridge - Send out cutoff list, adds $35 cutoff fee to account, and meter techs turn them off. On notice they write the final read and turn it back into the Supervisor. - Cannot take a check or electronic check to turn back on; can do it any other way. Note on a note pad that account needs to be turned. - The meter techs come in and get the note pad for turn-ons. After 3pm, Utilities will call out to the techs. - No way to know in HTE who has water turned on/off.
Adjustments	HTE	Cancel/rebill.
Field Mobility for Service Requests	None	None.
Reports & Queries	HTE	Have no way to validate numbers when running reports. Run it two days in a row and end up with different numbers. Likely batch processing that occurs overnight.
Budgeting		

Entry & Reporting	HTE, Excel	- Salary and wages modeled in Excel, +/-% factored into models, and then when finalized, manually entered into HTE; centralized.
		- Departments doing the green screen entry of their budget requests.
		- Paper forms outside of HTE that are collected as well (e.g., supplementals).
		- Working to streamline processes
		   o Provide a reference database in Excel to Departments (5 years of history)
		   o Version control in Excel difficult; will do version control in HTE.
		- HTE's limitations
		   o Input not too bad
		   o Difficult to aggregate budget info

Process	Application	Notes
		o Reporting and getting consistent information.
Engineering Services		
Department Scope		- Capital Improvement Projects: Water and Sewer, Streets, Water Towers, Facilities, Parks, Sidewalks. - Mostly in a new build state instead of maintenance state. Almost completely contract management work.
Technology Used	Payments in HTE Tracking in Excel Access for Reporting	- Will be going to e-Builder in about a month to consolidate technologies (construction management software). - All manual processes and data entry at this point. - e-Builder: Vendor can submit their pay request in a cloud-based login. Automate routing through the approval levels and generates a report. Will need an interface with this system.
Procurement	Bonfire (Purchasing)	Procurement of contracts is all handled by Purchasing, but the advertising is developed through CIP. They also make recommendations to Council.
Project Schedule	Excel	Project schedule is all done in Microsoft Excel.
Vendor Payments	HTE	Milestone payments are checked by Chief Inspector, then Project Manager develops a report for Finance. AP then pays the vendor.
Purchasing		
Bid Management	Bonfire (Cloud)	- Online bid management - Contract management - Archive - eBuilder CIP integration would be helpful

Requisitions	HTE	- Thresholds:
		  o $3,000 for a Purchase Order
		  o $50,000 requires City Management signature
		- Employee enters requisition; need to require supporting documentation with substantial requests, not currently supported by system
		- Routed to supervisor for approval
		- Routed to Finance to verify funding
		- Routed to Purchasing for PO issuance

Contracts Management	Bonfire	- No routing, no approval process - Does alerts and reminders - Willing to look at other options for contract management

Process	Application	Notes
Vendor Management	HTE	- Very inefficient process - Vendor sends vendor verification form, W-9 - Compile document, do verification - Finance approves vendor, Purchasing enters into HTE, FileBound for associated paperwork - Not a fast process – takes 1-3 business days if everything is smooth, otherwise a week or longer - Vendor self-service is a priority need
Inventory Management	HTE	Inventory and Capital Equipment is in Finance
Procurement Cards	Various	- P-Card threshold is $3,000 - Departments can make purchases using the internal approval workflow - Reconciliation is 1 week behind the purchase - Uploaded to HTE, send email to purchaser who goes into HTE and that goes through workflow for approval - Print out, attach receipt, get supervisor signatures sending to Accounts Payable; AP reconciles it, verifies funding, scan into FileBound - Once every 30 days, JP Morgan Chase is paid for P-card purchases
Field Purchase Orders	HTE	- Turned in directly to Accounts Payable - Short list of items that can be purchased using an FPO dictated by the Purchasing Policy
Salvage and Surplus Disposal	HTE, Excel	- Work with Finance to identify list, Auction service (PurpleWave) comes onsite and builds catalog, equipment goes to Auction service - Once sold, the list comes back and items are removed from equipment inventory - Auction Service provides payment to the City - If buyer doesn't pick it up within a certain period, the City can resell it; little to no monetary value, may consider disposal
Reporting	HTE	- Cumbersome, not easy to produce analytics - Want dashboarding capability
Building Permits & Inspections		
Apply, assess fees, accept payments, and issue a permit	HTE, TRAKiT	- Request a permit: Permits are sent via email or in-person. HTE processes the payment through the gateway payment provider (USAePay). - Would like to go online for all permits and have a portal that can track, apply and pay fees.
Document Management	FileBound	- Images are kept in FileBound.

Process	Application	Notes
		- Data conversion for TRAKiT is just the raw data in HTE, no images from FileBound.
Tracking contractor cash funds	None	No active tracking.
Types of inspections	HTE, TRAKiT	Plumbing, electrical, concrete, framing, anything construction.
Permit closure	HTE	Done currently in HTE, but all permit workflows will be done in TRAKiT.
Field mobility	HTE, iPads	Mobility: iPads, logging inspections results to portal and then reenter into HTE back at the office. TRAKiT will hopefully erase this process.
Citizen self-service	TRAKiT	- Will have this in TRAKiT. - Need to build out an interface for a daily upload of financial transactions between TRAKiT and ERP.
Human Resources		
General		Top Priorities from HR: - Workflow control and capability - Configurable dashboarding, alerting - Hierarchical control so supervisors can see things others cannot - Import data off csv files - Future dating - Want to be able to manage compensation, performance and disciplinary information - Payroll what-if budgeting scenarios - All the self-service features - Better reporting – using Cognos as well as possible without being a programmer; standard reports are cumbersome - Data flows seamlessly from one part of HRIS to another
Applicant Tracking	CivicHR	- Website posted to Indeed, CareerBuilder; get routed to CivicHR - Segregates internal and external employees - Internal employees do not have to fill out the same information as external ones, which is a limitation to the system - Hiring Managers create requisition, HR posts - Hiring Manager can review applications online, create an interview schedule - Hiring Manager can dismiss applicants using generic reasons - Ranks applicants

Process	Application	Notes
		- When switching to an employee, CivicHR kicks out information which has to be reentered into HTE
Personnel		
- Onboarding	Manual, DocuSign	- Hiring Manager prints out .pdf form to indicate who they want to hire - Supposed to fill out a New Hire IT Request form, but may not happen or it happens late; used to create login in the system, etc.; can be out of sync with real information if there are errors on the report - HR pulls the application out of CivicHR - Put together offer letter, etc., contact new hire - Reenter demographic information into HTE - Use DocuSign for new hires
- Position Control	Manual	- Comprehensive staffing document, use to manage authorized and budgeted positions - Sometimes have to have more positions open than are budgeted because people are retiring and we have to post the position before the person retires
Benefits Administration	BenTek	- API connection to HTE - Limitations: importing from HTE into BenTek, doesn't move across seamlessly; exceptions managed manually; HSA contributions don't come across from BenTek to HTE and need to be handled manually…HTE can't do 4 digit benefits codes which BenTek uses - Payroll to BenTek integration works well - Download done every payroll - When the data cannot come over cleanly, often must enter data manually in up to three different places
- Benefits Self-Service	BenTek	- Employees can access online - Retirees are done by HR, completely manual process because it won't come over into HTE
- Open Enrollment	BenTek	October
- Leave & FMLA Tracking	Manual spreadsheet	This is a manual process that needs to the automated in new system
Training Tracking	Litmus (Cloud)	- Online courses (various providers), learning tabs for new employee orientation, live class tracking, webinars - Course examples: Sexual Harassment, Local Government, Office, soft skills, IT, stormwater - Produces certificate

Process	Application	Notes
		- Run reports on who has done what, compliance - Will alert/remind you when certifications are expiring - Want integration so that when a person takes a new position, they come into the learning management system and based upon position control, basic training is identified
Performance Reviews	Paper form	- Manager completes the form and sends the paper over to HR - Spreadsheets - Annual review unless someone is on a performance plan - Want to be able to track them through a system; do them all at one time each year - Have been tasked to look at pay for performance; with performance reviews on paper, difficult to see trends, etc.
Document Management	OptiView (FileBound)	Within OptiView, files are organized within OptiView folder structure
Neighborhood Services		
Code Enforcement	MyGov	- MyGov works well for what the department needs. Will be going to the new version in Oct 21. Product is in the Cloud.
- Manage code violations workflow (e.g., intake, assignment)	MyGov	- Ways to get complaint: CivicPlus (website), email, call in to City Sec. - Complaints are created by Neighborhood Services and entered into MyGov.
- Interface with permits to determine additional fees	MyGov	- Do not collect fees, just liens. - Would like to have linkages with permitting data (TRAKiT). Looked at TRAKiT but did not have nearly as much functionality as MyGov. - MyGov benefits: - Report writing, tracking of cases. - Automated workflows, step-by-step process. - Strong mobility, photo attachment, using iPad.
- Enter, track liens	Excel	All manual process. Not enough liens to justify cost of the module.
- Field mobility access	MyGov	MyGov has good field mobility. Users are satisfied with the mobile app.
- GIS integration	MyGov	MyGov is integrated with GIS, has all the layers, works well. Updated monthly.
Animal Services	PetPoint	- Payments: Need to use PetPoint software and HTE to record financial data. Would like these linked. Not GIS based.

Process	Application	Notes
		- Reentry of payments is the biggest problem. Need to enter payments into two different systems. - Very pleased with the system and can share data with other cities. - Would like a link with ERP to transfer payment information. Credit cards. - Want to keep financial information in PetPoint. Using USAePay as payment gateway for animal and environmental.
Environmental Services	Inspect2GO: Restaurant MyGov: stormwater permit	- Inspect2GO works well for restaurant inspections. Web-based, but no GIS integration - Software used mostly for collecting of permitting information. - Also need to enter payment information in Inspect2GO and HTE. - MyGov: Not a whole lot of issues, work well.
Contracts Management		Use several contractors for work in the department. Would like to look at the contracts module.
Payroll		
Timekeeping	Executime and HTE	- Hourly clock in and out - Salary auto-populates - Time off requests handled through the system - Includes Police; gave up on advanced schedule (Excel) - Fire handled on paper, manually entered; have issues with FLSA, overtime. - HTE: Accruals for time off only keep balances; allow it to go negative to accommodate split time periods. Need a better management of accruals.
Payroll Processing	HTE	- Bi-weekly payroll - Review hours entry and requests - Once all hours are in, initial run calculations, register review - Print checks (only a few) on Wednesday, EFTs for direct deposit - Thursday creates the batches for GL and contributions
Employee Self-Service	HTE (Click2Gov)	- Employees can retrieve on demand - Print W-2; cannot print out W-2 from employee self-service
State & Federal Reports	HTE	- TRMS reporting (manual and automatic) - Other reporting needs are automatic

Process	Application	Notes
Payroll Budgeting	HTE	Merit/step increases individually managed manually; go out in Excel to each of the managers, send it back with increases, sign off on spreadsheet manually; HR enters them individually into HTE; cumbersome process; run audit reports to verify they are in correctly
Employee Expense Reimbursement	HTE	Wellness reimbursement
Reporting	Cognos	- HTE does not produce the reports needed; must use Cognos; HTE reports have a date range you can use - If you change an employee's title it will not retain history - Only have 2 digits codes - HSA contributions limited to 3 digits ($999) - Employee cannot have 2 addresses in the system; must default to how do we get your email to you (P.O. Box), which is not federally compliant for HSA - Employees adding a bank information, must print out an 8-page report to create the next incremental code for the new bank - Employee ID numbers are kept in an Excel spreadsheet because HTE does not track them
Public Works/Work Orders – Water & Wastewater Services		
Scope		- Responsible for the maintenance of water and sewer assets. - Initial installation of water meters, some leaks can be fixed by Public Works. - New build is done by contractors, maintenance is done by this group. Engineering manages deployment of new water lines. - Recently bought Cartegraph and will begin implementation soon.
- Asset Entry	Cartegraph	Will be tracked in Cartegraph.
- Asset Location Tracking	Cartegraph	Will be tracked in Cartegraph.
- Asset Valuation/ Replacement Cost	Cartegraph	Will be tracked in Cartegraph. Assets are put into GIS through Engineering's input, but changes to asset's valuation are not inputted.
- Asset Depreciation	Cartegraph	Will be tracked in Cartegraph.
- Warranty Tracking	Cartegraph	Will be tracked in Cartegraph.
- Preventative Maintenance	Cartegraph	Will be tracked in Cartegraph.
- Barcoding/RFID	None	Not going to be utilized.
- Reports & Queries	Cartegraph	Will be tracked in Cartegraph.

Process	Application	Notes
Work Orders		
- Resource Allocation	Cartegraph	Would like to track labor costs through Cartegraph. Need to have a simple interface with the ERP to track this.
- Field Mobility	Cartegraph	Field mobile app will be deployed.
Inventory Management	Manual	- The City does have a warehouse for inventory, but it is unmanned. All manual counting of inventory. No live inventory tracking system. - Looked at RFID system for warehouse but could not justify the cost. - Currently, inventory is tracked in Excel.
Integration with ERP		Will need to further explore what Finance and management would like to see in the new system (e.g., inventory, assets). These things can be tracked in Cartegraph, but Finance will need to ask PW every time they need something.
Public Works/Work Orders – Equipment Services, Street Maintenance, Solid Waste, Facilities Maintenance, Parks & Recreation Maintenance		
Equipment Services		Like water/wastewater, the scope is not large enough to fully integrate with systems. Still need labor tables/pay rates for work orders.
Facilities Maintenance		
- Asset Tracking	MaintainX	Not a big operation, might to migrating to Cartegraph.
- Work Orders	MaintainX	
- Inventory Management	None	Inventory is not tracked, not large enough to track. On demand purchases.
Fleet	ThingTech	Very satisfied with the system and very customized to their needs.
Parks & Recreation Maintenance		
- Asset Tracking	Manual	No asset tracking.
- Work Orders	Manual	Work orders are not created. Parts are purchased through P-cards. No system to track assets or work orders. Does not want to complicate simple workflow.
- Inventory Management	None	No inventory management.
Integration with ERP		If management wants accurate financial information, the two systems must be tightly coupled together where the ERP maintains inventory and Cartegraph executes the work order.

ERP System SWOT Analysis

A SWOT analysis is a process that identifies strengths, weaknesses, opportunities, and threats. Specifically, SWOT is a basic, analytical framework that assesses what an ERP system can and cannot do, for factors both internal (the strengths and weaknesses) as well as external (the potential opportunities and threats). Using analytical data and process interviews to evaluate the effectiveness of the system, a SWOT analysis determines what assists the organization in accomplishing its objectives, and what obstacles must be overcome or minimized to achieve desired results.

The following is a SWOT analysis of the current HTE application environment.

Strengths	Weaknesses
- End user knowledge of current system functionality and workflow (Finance and Utility Billing) - Desire for increased technology usage by City end users and management - GIS Functionality - Local Government Data Model - IT staff flexibility with current system to develop short and long-term fixes for system problems.	- Lack of integration between HTE and auxiliary applications leads to redundant manual processes that are inefficient and limit the ability to tie financial data with assets or projects - Lack of modern functionality to support Finance, HR, Payroll, Utility Billing - Lack of reporting and analytics tools to enable City Management to make better informed decisions. - Lack of vendor investment in the software - Many workflows rely heavily on human interaction or paper rather than automation - Lack of intuitive functionality within HTE causes departments to look to other solutions.

| Opportunities	Threats
- Improved supportability and efficiency of the environment by simplification and standardization of applications - Increase real-time analysis capabilities through portals or dashboards that summarize key information - Outsourcing the hosting of the City's computing infrastructure to ensure recoverability - Increased self-service and transparency functionality to increase citizen engagement and responsiveness - Unified and integrated application ecosystem for automated workflows and increased efficiency - Increased integration with GIS to allow for centralization of information and increased capabilities for end users and citizens - Increased training for end users to improve functionality of the new system.	- Dependence on the knowledge of experienced staff to locate information physically and digitally - Dependence on existing staff knowledge to maintain their workflows and databases - Legacy software application, specifically HTE, are quickly approaching end of life. Holding onto this legacy software could put the City at a greater risk for system failure, data loss, and data being stolen from outside hackers. City may find itself being told by CentralSquare that they must migrate to HTE replacement in a timeframe not suitable for the City. - Dwindling application support for HTE - Inadequate IT staff support resources or environment incompatibilities arising from lack of adequate planning or assessment - High dependency on specific staff for ongoing support of multiple areas.

Technical Infrastructure Review

As part of the Assessment, the following technical areas were examined to identify any challenges that could inhibit the new system's effective installation, deployment, and use. By addressing these during this process, we look to minimize their impact on any new ERP system deployed.

Technical Overview

The HTE system is currently being hosted locally by the City in the primary data center, located in City Hall. The City will be re-locating the data center prior to the anticipated ERP replacement project. If the system is locally hosted, the servers, storage and SQL environment will need to be upgraded. IT currently has Dell servers but is moving to a hyperconverged solution next year. This should be sufficient for the new system. The backup data center will be located at the Services Center Building. The current process for backups is automated through Barracuda, but IT is in the process of converting to Cohesity. The proposed solution will need to be able to work in this environment, if hosted by the City.

The City's network currently consists of 100MB dedicated fiber from the City Hall to the other City buildings, with the exception of the Police Department which has a 1GB connection. There are three internet points-of-presence (POPs), two deployed at City Hall (200MB Charter is the primary and 50 MB AT&T is the backup) and one 50 MB AT&T connection at the Service Center. These lines will be upgraded in the near future. In addition, each main building will have their own POP to make the network resilient in case the fiber goes down. Each POP will have an associated firewall to monitor incoming and outgoing network traffic. Most ERP systems prefer to utilize a single point of entry (IP address) to access the system. The current network diagram is displayed below for reference.
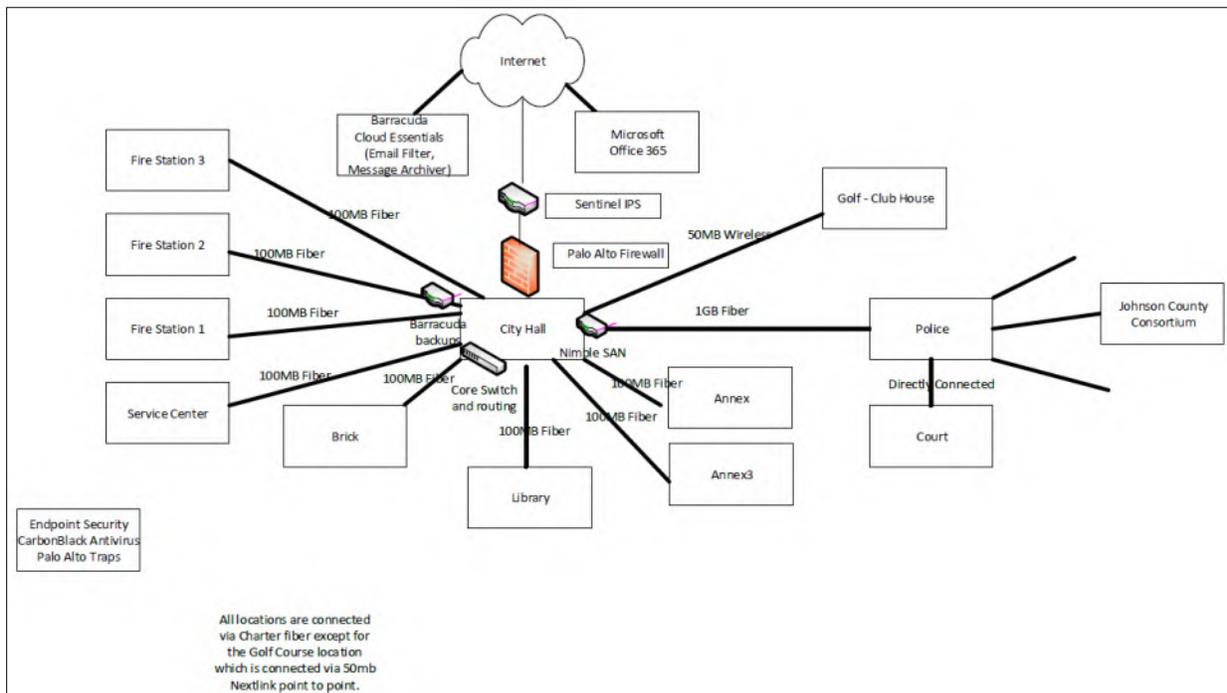
Overall, the City's IT Department has done an excellent job in building and supporting an environment that is disaster recoverable and reliable in performance. The future network of the City should be able to handle the new traffic load.

The proposing vendor will need to meet certain technical requirements and verify that the current technical environment of the City meets the needs of the new system. The City's current technology standards is shown in the table below.

Technology Standard	Current
Operating Systems (OS) & Related Software	
▪ Server operating system(s) and version levels	Windows 2008 R2, 2012 R2 and 2016
▪ Desktop operating system(s)	Windows 10
▪ Mobile device operating system(s)	iOS 14
▪ Relational database	SQL 2012
▪ Geographic information system (GIS)	ESRI ArcGIS Desktop 10.4 ESRI ArcGIS Server/Portal 10.5
▪ Business application environment	IBM iSeries DB2, MS Office
▪ Document management system	FileBound
Hardware	
▪ Server hardware (VM, hypervisor), version	Dell server w/ Hyper-V Server 2016 Core
▪ Desktop hardware	Dell
▪ Mobile devices	iPad, Surface and Dell 2-in-1 tablets
Data Center	
▪ Existing server space	Sufficient space for new system
▪ Rack space	Sufficient space for new system
▪ Environmentals (e.g., AC power)	Sufficient space for new system
▪ Backup solution	Automated. Currently on Barracuda in the process of converting to Cohesity
▪ Disaster recovery site	Building one out in the near future
Network	
▪ Network equipment (e.g., switches, routers)	Brocade and HPE
▪ Internet Points of Presence (PoPs)	Primary is 200MB connection at City Hall. Backup is 50MB connection at Service Center.
Other	
▪ Field Automation Capabilities	The City is open to deploying field automation devices where and improvement in efficiency and effectiveness will result.
▪ Website Integration	This functionality is critical for the proposed system with a self-service Customer Portal.
▪ Customizations	The City wants to purchase a system that is self-configurable, commercial off-the-shelf (COTS) system. It is not interested in customizations or systems that require teams of software engineers to configure the system.

ERP System Support Review

There are many reasons that ERP systems fail to meet the expectations of their users. In addition to the shortcomings of the system or business processes, system support is a major contributor to end user dissatisfaction.

As part of the Assessment, the areas of system administration, database administration, power users, and end user training were examined to identify any challenges that could inhibit the new system's effective installation, deployment and use. By addressing these during this process, we look to minimize their impact on any new ERP system deployed.

Applications Support is staffed by a few individuals who primarily support the HTE system but have multiple responsibilities in IT and Finance. Due to limitations with HTE, modifications have been made to the system. These have been done outside any formal or systematic change control methodology. **Since knowledge of the changes have gone undocumented, the system's continued operation is dependent upon these personnel. Because of this uncertainty, the City is in a high-risk situation. The undocumented fixes that have been made to the system will no longer be supportable by the IT Department when the system reaches end of life and vendor support comes to an end.**

Day-to-day, functional administration of the system is performed by Finance and the IT Department. Power users of the system are mostly located in Finance.

Ongoing end user training has been inadequate throughout the lifetime of the system. As a result, knowledge of what the system is capable of is limited.

For system implementation, at least one SME per department will be required in order to ensure timely system integration and data conversion. Sciens recommends the following staffing levels to ensure a successful system implementation and ongoing support of the City's ERP environment:

- 1 ERP System Administrator
- 1 GIS Analyst/Database Administrator
- 1 subject matter expert (SME) or super user per operational department (e.g., Finance, HR, UB, etc.).

More information on these roles can be found on page , Risk Mitigation Strategy.

Future Environment

Strategic Goals for New System

The City acquired the core modules of the HTE financial system decades ago. Since that time, it has enhanced the system's capabilities through the deployment the 3rd party peripheral systems that provide for more modern functionality, such as fee collection and document management. The financial system by itself, however, does not meet the City's growing needs, especially in the areas of reporting, GIS integration, and mobility.

During discussions with City Management, the following Strategic Goals were established for the new system:

- Encourage new process development
- Reduce/eliminate redundant data entry
- Automate and integrate functions currently requiring manual intervention
- Automating manual processes to reduce staff workloads
- Moving to a system with tight integration between field electronic data collection and the backend database
- Improved data analysis and reporting through easy to use, customizable reporting tools and modern analytical toolsets.

Future Applications Architecture

In order to meet the overall functional needs for the operational departments, as well as address the system limitations, the City should implement a new integrated Commercial off the Shelf (COTS) based ERP system. In order to streamline the workflow, separate applications will need to integrate with the ERP system to provide other necessary capabilities.

The integrated suite of applications provided by the ERP comprise the Applications Architecture that provides the functional capabilities to meet the operational department's needs. The ERP consists of an integrated suite of applications, as illustrated on the following page.

City of Burleson
ERP Applications Interaction Diagram
Departmental Requests for Future State
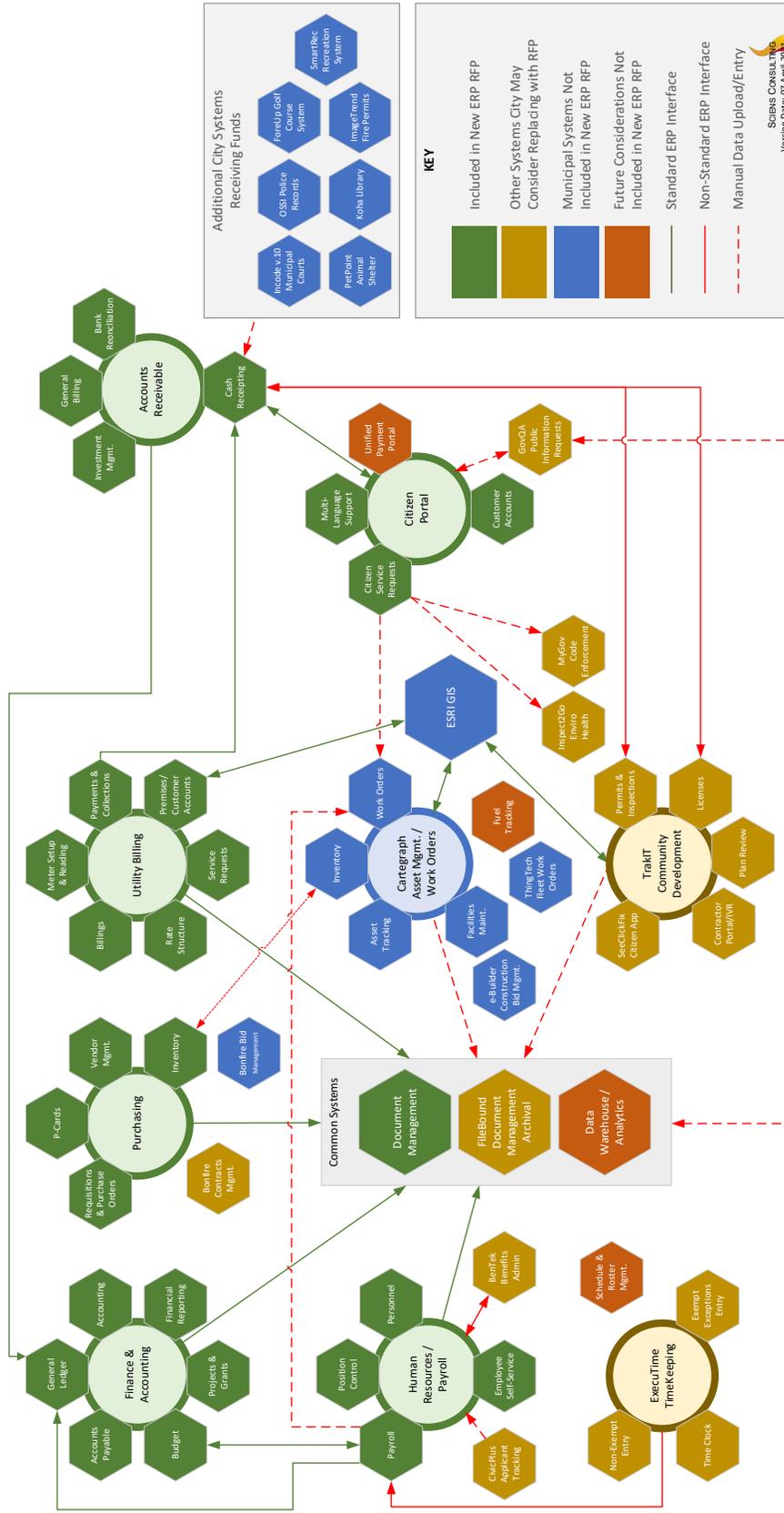
A modern ERP can integrate with related computerized systems to retrieve relevant data and incorporate that data into the ERP. This integration provides the obvious benefit of reducing data input time for the users. Moreover, by bringing the data directly from the source data systems, data input errors can be minimized, thus maximizing the value received from those systems as well. Real-time integration can be expensive to create and maintain, however, and each one should be evaluated from a cost-value perspective.

The Direction of Municipal Enterprise Resource Planning (ERP) Systems

Real-Time Integration

The promise of ERP systems is providing an integrated view of core business processes in real-time. ERP systems track business resources and the status of business commitments (e.g., requisitions, purchase orders, payroll, work orders, permits, licenses, inspections). The applications that make up the system may share data across the various functions (e.g., finance, human resources, public works, community development) that provide the data. ERP systems can facilitate information flow between all business functions and manages communications with outside points of contact (e.g., citizens, businesses). Finally, as repositories of data from across the municipality, ERP systems pose the best opportunity for providing real-time information for decision-making, integrated management dashboards, and performing predictive analytics.

With the current system, managers are faced with the decision to either use the latest information available, which could be a month old, or to track information themselves in a separate process. Modern ERP systems offer more robust, real-time, intuitive querying and reporting capabilities, and are fully integrate with Microsoft Excel. These types of tools provide managers with the accurate and dependable information they need to make decisions in real-time in a format with which they are already adept. However, while these reporting capabilities are strong within a component of the ERP (e.g., Finance, Human Resources, Payroll, Community Development), they are weak across the ERP system due to limited, real-time integration between the components.

This is the promise but not quite the reality of today's ERP systems. In fact, true integration of business processes and the ability to provide actionable information across the ERP is limited but improving as the vendors invest in their systems.

Where Are ERPs Headed?

Thirty years ago, we went shopping in a mall. There were dozens of stores where we bought what we wanted, paying each vendor separately. If we wanted to look something up, we went to a library, a building in a separate part of the City. The latest generation seldom uses email and performs most transactions over their phones. If they want to know something, they search for it over the Internet. In 2017, close to ten percent of all retail shopping happened online, doubling

in just a few years' time.[1] Much of this activity happened through a single marketplace, like Amazon.

So what does this have to do with a municipal EPR system? Like shopping in today's malls with its various stores and cashiers, someone wanting to pay a water bill, for a business license and for a yoga class must do business with each department in the City separately. Cities have tried to minimize the number by utilizing Cashiers who have access to multiple systems; but statistically, citizens are trending away from coming to City Hall to pay their bills. If citizens are doing business with one City, why do cities operate this way? The biggest reason is that cities use non-integrated, complex and obsolete backend systems that are not capable of putting One City face towards its customers.

In the ideal, there would be a single company with a single system that could provide this capability. But this City-in-a-Box does not exist today and, as history is shown, when the market is dependent upon a single vendor to provide end-to-end services – a monopoly – it often stagnates, and innovation slows. Though there are vendors pursuing the dream of being the City-in-a-Box, the reality is that cities pursing an ERP today must bring together systems from multiple vendors and, often, different platforms (e.g., different databases, Cloud vs. on-premises systems). The challenges are complex, and the solution can be expensive. But the benefits to the citizens are substantial, as are the citizens' perception of the City.

But that does not mean that cities should give up the goals they have from having a single ERP platform. Specifically:

- Improving efficiency and reducing data re-entry
- Ability for citizens to
  - Access information about the City in real-time
  - Report issues to the City, have them resolved and be notified when they are resolved
  - See and pay for all transactions with the City in a single payment
- Ability to mine the extraordinary amount of data it is collecting through the ERP so that
  - Managers can get real-time information to make decisions using intuitive dashboards that identify potential trouble before (or at least as) it is happening
  - The City can use analytics to improve citizen interactions with the City and provide trend and predictive analysis to anticipate issues before they arise.

Single Pane of Glass and the One-City Citizen Portal

There is a technology term called a "single pane of glass"[2] that describes something like a portal that integrates management information from varied sources across multiple applications and environments into a single display. Cities want to make it easy for both City staff and for citizens to find the information they need, alert them when there is something that they should pay

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[1] https://www.statista.com/statistics/255083/online-sales-as-share-of-total-retail-sales-in-selected-countries/

[2] https://www.webopedia.com/TERM/S/single-pane-of-glass.html

attention to or might be interested in and make it easy for them to communicate and transact with the City.

This One-City Citizen Portal makes it possible for a citizen to go to a website, log in and be recognized. Unlike normal municipal websites, this Citizen Portal would not be focused on the City, but on the citizen and what they want to do when they come to the Portal. At the Portal, they could find their home on a GIS map and discover information about it, like permits issued on the property and water usage. Residents could also see transactions that are associated with this address, like signing up for yoga classes or requesting an inspection; and, they could pay for all transactions with the City in a single credit card transaction. In addition, the Portal utilizes social media algorithms to learns residents' likes and dislikes, alerts them when there are new activities that they are known to do, like signing up their kids for swim classes, and guides them to content they are likely to be interested in.

Data Warehouse, Dashboards & Analytics

Most modern ERP systems have some kind of dashboarding capability, the ability to summarize data collected by that system into a dashboard with colors to flag a manager when they need to pay attention to something. This type of simple interface alerts the manager when the data moves outside the boundaries pre-set by the user. But it is restricted to the data collected in that system. In a multi-system environment, even those utilizing interfaces, minimal data is exchanged.

To overcome this, cities must take the initiative to create their own cross-system data warehouse. Building upon common key data shared by these systems, such as parcel identifiers in GIS, this data can be analyzed, validated and manipulated to show trends, and displayed on maps to show areas of concern or interest. More importantly, cities will be able to use this data to create usable, predictive information for managers so that they can anticipate issues before they arise, such as potential infrastructure failures or growing needs within the community. This type of approach can be robust for both City staff and citizens; however, it requires IT staffing of at least a database administrator to develop and support the warehouse.

ERP Marketplace Assessment

Introduction

The municipal Enterprise Resource Planning (ERP) systems marketplace is a highly dynamic one, with a variety of vendor types, capabilities, and delivery platforms. The information in this section provides a mechanism for categorizing the vendors and focusing on those that will best meet the City's needs. Detailed breakdown of current marketplace vendors can be found on pages 46-48.

Integrated Municipal ERPs

The purpose of the integrated municipal ERP is to provide full function capabilities to support the overall operation of a City. This links the entry of data at one stage of the process, such as an applicant for a job entering their application, through to the personnel and payroll systems when they are hired. Alternatively, it enables the tracking of a capital asset from requisition to utilization and association to a work order, to depreciation and disposal. This type of data flow enables City staff to spend their time on quality control, management and analytics, instead of redundant data entry.

The integrated ERP system should provide workflow to replace existing manual routing processes, and automatically generate and store copies of key documents in the integrated electronic document management system, thus reducing or eliminating the need for files and boxes currently stacked in offices and warehouses.

A key attribute of ERPs is their ability to reduce redundant data entry. Currently, due to system limitations, information is printed from one system and reentered into another system, introducing the chance for errors and omissions, as well as potentially angering citizens. Even where electronic data is provided, it is often manually downloaded and/or uploaded into systems.

Core capabilities of the municipal ERP include those shown here and detailed on the next page

Area	Description	Functions
Finance & Accounting	Provides fiscal and budgetary application, including fund accounting in accordance with GAAP and GAAFR requirements; and ability to produce the Comprehensive Annual Financial Report (CAFR). Also includes integrated purchasing process.	▪ General Ledger ▪ Budget ▪ Projects & Grants Accounting ▪ Accounts Receivable ▪ Treasury ▪ Accounts Payable ▪ General Financial Reporting, CAFR ▪ Purchasing ▪ Vendor Management (W-9s, 1099s) ▪ Bid Management ▪ Requisitions ▪ Contracts Management ▪ Procurement Cards
Human Resources	Provides for tracking and management of all Human Resources information from application to retirement, including payroll and benefits.	▪ Applicant Tracking ▪ Personnel ▪ Payroll ▪ Employee Expense Reimbursement ▪ Benefits ▪ Training ▪ Employee Self-Service (electronic access to W-4s, benefit enrollment, pay stubs, W-2s) ▪ Performance Management/Review
Community Development	Provides for management of planning, zoning and building functions.	▪ Electronic Plan Review ▪ Permits & Inspections ▪ Licenses ▪ Special Assessments ▪ Code Enforcement ▪ Citizen Self-Service ▪ Field Mobility
Citizen Portal	Provides for enabling citizens to manage requests for assistance and payments to the City.	▪ Citizen Self Service ▪ Online Payments ▪ Citizen Transparency ▪ Analytics
Asset Management	Provides for management of assets, including tracking, preventative maintenance and depreciation.	▪ Asset Tracking, Depreciation & Disposal ▪ Work Orders ▪ Fleet ▪ Inventory ▪ Field Mobility for Work Order Management
Utility Billing	Provides operational management of utility billing, including establishment and setup of accounts, meters, rate structures, and management of billings and collections.	▪ Premises ▪ Customer Accounts ▪ Meters ▪ Rate Structures ▪ Billing ▪ Payments & Collections ▪ Adjustments ▪ Service Requests ▪ Field Mobility for Service Request

Common Systems

Modern ERP systems are integrated with other core systems. These include:

- Geographic Information System (GIS) – Formerly land management when address validation was the only concern of the system, some vendors have created real-time interfaces with GIS for specific components of the ERP system (e.g., permitting, asset management), though most addressing remains static exports from GIS (non-real time). Industry standard for municipal GIS is ESRI; most ERP vendors ESRI GIS. Critical touchpoints for GIS with ERP include:

    o Utility Billing – address validation; full map integration for routing of service requests
    o Community Development – address validation; full map integration for electronic plan review, permits, inspections and code enforcement; routing of inspections and code enforcement
    o Asset Management – physical location of assets; asset attributes.

- Document Management – Electronic document management provides for the imaging, indexing, and management of images. Ideally, this functionality is fully integrated with the ERP so that images are accessible as part of the ERP system's workflow; for example, if a vendor calls to inquire about payment, the AP Specialist can see the image of the invoice the vendor sent, the shipping documents as they were received at the warehouse, and the check that the City sent out in payment.

- Data Warehouse/Dashboards – Legacy administrative systems were very good at storing data and printing out a few reports in well-defined and inflexible formats – data rich, information poor. The IT Department or the vendor would have to be involved in programming changes if a new format or type of report was needed. The real value of the modern municipal ERP is in its ability to analyze, validate, and manipulate the data being entered. Critically, they can provide City Management with real-time information about the performance of operations so that corrective measures can be taken immediately if needed.

    In order to bring together data from the various vendors' systems making up today's ERP, this type of business analytics requires knowledge of powerful reporting toolsets, like Socrata or OpenGov. Other vendors have chosen a different path, using less robust, yet more user-friendly tools like Microsoft SharePoint for easily configurable business analytics. Regardless, the result is that real-time information is provided in user-friendly dashboards – a graphical view of performance data/metrics similar to the dashboard of a car – that allow managers to view overall or departmental details, such as budget status, in an easy-to-use format.

Off-the-Shelf vs. Custom System

With the advent of standardized platforms like Microsoft .Net, changes to systems – workflow, presentation, naming conventions, etc. – moved from changes in the software to changes in tables that the software draws upon. This was termed "configuration" as opposed to "customization" because it did not involve new programming or software code, not changing what the software did, but only how it did it. This meant that subject matter experts – usually from the customer's staff – could be trained to manipulate the tables. The result was that the

price of so-called commercial off-the-shelf (COTS) systems dropped because the manpower involved to rollout such a system was greatly reduced.

However, the downside of such as COTS system is that, because what it does is still programmed in, cities must adjust their business processes to accommodate the system. In addition, the software may not do one hundred percent of what a city does, and there may need to be peripheral systems added to support city operations. On the other hand, the benefit of such a system is that the vendor draws best practices from the entire industry, and cities benefit from the collective knowledge and business practices.

The alternative, which many very large (Tier 1) cities pursue, is the old model of customization, utilizing a skeletal programming structure and adding specifics for a city based upon how it operates. The benefit is that a city will not need to change its business processes – they will be hard coded into their system. The downsides to this are that they will not get to leverage the collective knowledge of best practices in the industry, and when they need to change how they will do things, they must have the vendor change the programming code. In addition, the cost of these systems can be 2-5 times the cost of a COTS system.

For cities the size of Burleson, it is recommended that they pursue COTS over customization in order to reduce costs, simplify implementation and leverage industry best practices. COTS would be the best approach whether the City pursues a single system or multiple systems to fulfill municipal ERP functionality.

Single Vendor vs. Best of Breed Components

As we have discussed, there are major functional areas which, from a day-to-day operational perspective, have little crossover. While they share common system elements, like GIS and document management, nearly all touchpoints between these systems are financial, specifically cash receipting.

The result of this is that cities have a choice when pursuing ERPs. They can purchase a fully-integrated system from a single vendor. Typically, these will meet 80-90% of a city's needs. More importantly, their demands upon the city's IT Department will be greatly reduced because the interfaces between the functional modules of the system are maintained entirely by the single vendor. This "one throat to choke" approach is preferred by many cities because, though there may be a small number of areas where functionality is deficient, nearly all other needs are met, cost of the overall system is lower than the alternative, and the demands on the support staff are minimized.

The alternative to this single vendor approach is the so-called best-of-breed approach. In this approach, the city will act as an integrator of systems. Each Department involved in the systems acquisition would direct their portion of the purchasing process. This will result in each department choosing the system that best meets their needs; each system would require the appropriate interfaces for the entire ERP to function as a single integrated system. This requires the city to have strong technical project management and support, and to monitor and update interfaces as there are changes to each vendor's system and/or the operating system version their systems run on.

In general, the best-of-breed approach is costlier for the project and maintenance, as well as maintenance of the interfaces. It also requires more and highly trained resources from the IT Department to support.

For cities the size of Burleson, it is recommended that they pursue the single vendor system for cost, simplicity of implementation and lower resource support demands.

Self-Hosted vs. Cloud (Web) Hosted

Hosting refers to where the servers are located that hold the City's application and databases. Self-hosting means that the City's IT Department will secure and maintain those servers in the City's data center and that users will access them over the City's network. The IT Department will maintain the servers and provide backup for them. The IT Department will also ensure that there is a disaster recovery capability in the event of a catastrophe so that the City's downtime resulting from the catastrophe will be minimized.

Cloud or Web hosting means that a third party hosts the City's servers and that they are accessed by users over the Internet. Generally, the ERP vendor will provide this service to the City, often labeled "software as a service" or SaaS. Functionally, users should not notice the difference since, sitting at their desks, they are accessing a server in the data center or in a data center somewhere in the United States; both systems have the same functionality and provide the same information. To ensure that the experience is the same, it is recommended that the City provide (a) substantial enough bandwidth to the Internet so that it can handle constant traffic and large files, such as attachments and images in the document management system, and (b) a secondary Internet point of presence (POP) be established from another provider to ensure redundancy. Also, the City will need to ensure that the contract with the vendor specifies that the City owns their data and, if the City chooses to change ERP vendors at a later date, you have full access to it.

In summary, your options are:

- <u>On-Premise</u>: On-premise delivery models assume that businesses license ERP software and install it on computers at their location. ERP software users are responsible for buying computer hardware and software for these solutions. They are also responsible for applying any software upgrades, patches or fixes provided by the software vendor.

- <u>Cloud Delivery</u>: Cloud delivery models allow the software user to use application software on another firm's computing equipment; in the case of some ERP vendors, it runs on their system in their data center. Pricing for these solutions is often done on a monthly basis and may scale up or down based on a customer's usage of the product. This environment also means that software users do not have to perform software maintenance and upgrade activities with their own internal staff. This could save some Cities from needing to hire additional IT personnel to support their ERP software.

- <u>Hybrid Solution</u>: In a hybrid environment, a software vendor can offer multiple methods for deploying the software. It can be used on-premise, hosted on the vendor's cloud or on another firm's cloud. These solutions may also possess the flexibility to go from on-demand

to on-premise (and in some cases back to on-demand) to give you the ability to bring an application in-house should they anticipate the need to make modifications that exceed the capabilities of the standard cloud offering. In addition, a vendor could offer certain modules (e.g., general ledger) as an on-premise application while other modules (e.g., citizen relationship management) are offered as hosted or on-demand solutions. These products are often designed to work together even though some ERP functionality and data may reside on the customer's data center while other data and functionality resides on a cloud environment.

The City will need to weigh the benefits/risks when choosing between On-Premise and Cloud Delivery solutions. Overall costs of these options are relatively similar for the first 5 years, but Cloud will be significantly more after this initial period.

Architecture – Mobility

The objective of any Mobile strategy is to empower staff to work in the location that best suits the type of work they are doing – ultimately to improve their efficiency and effectiveness at doing that work. An increasingly mobile workforce is more capable, efficient, and flexible. Mobile applications have enhanced workforce productivity in such areas as inspections, code enforcement, service and work order performance, inventory and order management, customer support, and analytics. The trend also has led to greater information flow, improved workflow, and increased employee satisfaction.

Examples of municipal deployment of mobility illustrate these points.

- Inspectors perform their work in the field, update systems remotely through a mobile device, and communicate to others through email or printing from their vehicles without ever having to come back to the office.

- Public Works crews perform work orders and remain in the field, receiving the work orders electronically; these would already be plotted and routed on a map for the most efficient route and use of resources, items on their trucks used to accomplish work orders would be automatically deleted from inventory and, if necessary, reordered, and when they accomplished a work order, the requestor (e.g., a citizen requesting a pothole be filled) would be notified.

In order to make this type of Mobility a reality, four key factors had to converge:

- Internet – To date, the internet has been too slow for high volume transactional processing like an ERP system. Innovations occurring are making the Web much more accessible and faster, making it a viable platform for ERP systems.

- Wireless – True mobility requires a constant wireless signal to function; losses in signal translate into loss productivity for workers. In most municipalities today, the City is covered by either City-owned wireless or a LTE connection through a wireless provider.

- Mobile Devices – For true mobility, mobile devices have to be highly portable and usable while in many types of conditions in the field. While laptops may be portable, their form

factor keeps them from meeting these conditions. The emergence of smartphones and tablets have made true mobility possible, with a size and usability that matches the field work environment.

- Mobile Applications – True mobility requires the mobile application to be written for a mobile device. This was the last piece to emerge in the ERP market. Previously, vendors tried to make the mobile application the same as the desktop application. Desktops have the advantage of a mouse and the applications assume you are using one. In mobile based applications buttons are small and the type size is also small. But workers in the field do not have a mouse, and often have glare on screen; small print and tiny buttons are impossible to work with. Recently, ERP vendors began rolling out mobile applications designed for field workers that have specific tasks that can be accomplished with targeted workflows. With the click of a few larger buttons, inspectors can get the job done, email the results to the developer and move onto the next job.

With the convergence of these factors, cities can take advantage of field mobility.

But what kind of mobile device should the City invest in to support their new ERP system? There are several options and no true "right answer" yet. However, since our goal is also to minimize the amount of support required for these devices by the IT Department, there are indicators for us to follow. Specifically, nearly all the ERP vendors have chosen to develop their applications in a Microsoft environment; this is consistent with most applications for municipalities. As a result, most IT Departments have become skilled at supporting a Microsoft environment. With its Surface Pro, Microsoft has released a desktop in a tablet form factor – a usable tablet to perform business functions – just like you were working on your desktop. Many similar products with varying levels of processing power now exist in the market.

It is important to choose an ERP system first and see what type of mobile devices that ERP vendor supports. Platforms and capabilities can differ from vendor to vendor; while it is preferred that the City select a system that provides support for modern, cross-platform capabilities such as HTML5, this should not be the driver for the selection.

Representative Municipal ERP Vendors

The following vendors provide Municipal ERP fund-based accounting. Although there are many new ERP vendors in the market today, few currently utilize fund-based accounting.

A list of vendors who are involved in the municipal ERP marketplace is shown below, with a summary of the major functional areas they provide. Nearly all of these vendors provide some kind of Cloud-based hosting option.

Vendor	Major Functional Areas	Website
Accela	- Asset Management - Work Orders - CRM - Environmental Health - Finance & Administration - Land Management - Licensing - Utility Billing	http://www.accela.com/
Advanced Utilities	- Utility Billing - Customer Information and Billing - Customer Self-Service - Backflow Web Portal	http://www.advancedutility.com
AssetWorks	- Fleet & Fuel Management - Asset Management - Work Orders - Inventory Control	http://assetworks.com
BasicGov	- Community Development - Permitting - Code Enforcement - Inspections - Planning & Zoning - Business Licensing	http://www.basicgov.com
Cartegraph	- Asset Management - Work Orders	http://www.cartegraph.com
Cayenta	- Financial Management - Purchasing - Work Order & Asset Management - Fixed Assets - Human Capital Management - Customer Information System	http://www.cayenta.com
CentralSquare (Public Admin Suite Enterprise)	- Financial Management - Human Capital Management - Utility Billing - Community Development - Asset Management - Citizen Services & Revenue	https://www.centralsquare.com/public-administration/enterprise

Vendor	Major Functional Areas	Website
CityWorks	- Asset Management - Work Orders - Expense Management - Permitting - Code Enforcement - Business Licensing	http://www.cityworks.com
CORE Business Technologies	- Cash Receipting - Document Management	http://www.corebt.com/
CSDC	- Permitting and Compliance - Licensing - Grants Management	http://www.csdcsystems.com
Dude Solutions	- Facilities Management - Inventory	https://www.dudesolutions.com/industries/government/public-services
Harris MSGovern (CityView)	- Property - Permits & Inspections - Planning - Code Enforcement - Licensing - Animal Licensing - Cemetery Management	http://www.msgovern.com
Infor (IPS)	- Asset Management - Work Orders - Facilities - Human Resources - Finance - CRM - Performance Management - Permitting	http://www.infor.com/solutions/ps/
Kronos	Timekeeping	https://www.kronos.com/
Microsoft Dynamics	Finance	http://www.microsoft.com/en-us/dynamics365/operations
NeoGov	- Applicant Tracking - Onboarding - Performance Management	http://www.neogov.com
Oracle	- Finance - HR - Community Development	http://www.oracle.com/industries/public-sector/local-government.html
Quintel Management Consultants (SAP VAR)	- Finance - HR - Community Development - Asset Management	http://www.quintel-mc.com

Vendor	Major Functional Areas	Website
	▪ Fleet	
Smart Energy Water (SEW)	▪ Energy and Water Utility Billing ▪ Smart Meters ▪ Data Analytics	http://www.smartenergywater.com
Smart Meter Solutions	▪ Meter Data Management ▪ Utility Billing	https://www.oati.com/solution/smart-energy/meter-data-management
Superion	▪ Finance ▪ Payroll ▪ Community Development ▪ Work Management	http://www.superion.com
TruePoint Solutions	▪ Utility Billing	https://www.truepointsolutions.com/
Tyler Technologies (Incode, Munis, EnerGov)	▪ Financial Management ▪ Human Capital Management ▪ Utility Billing ▪ Community Development ▪ Asset Management ▪ Citizen Services & Revenue	http://www.tylertech.com
WorkDay	▪ Financial Management ▪ Human Capital Management ▪ Financial Performance Management	https://www.workday.com/en-us/industries/government.html#/applicationsanchor

Plan

Introduction

Based upon the Assessment, the Plan for acquisition and selection of a vendor (as well as general directions for the implementation) are shown below.

Acquisition Strategy

The City of Burleson will pursue the acquisition of commercial, off-the-shelf (COTS) system or systems that are highly user-configurable and have no customization. The City will not entertain vendors whose system needs custom development or software coding to customize the solution.

The City will issue a single request for proposal (RFP) for the entire system. The City will entertain proposals from both integrated system vendors, as well as best-of-breed component proposals. Vendors whose system does not include all components may choose to partner with others to provide a complete solution to the City. However, the City will contract with a single vendor who brings the complete solution to them as the prime integrator; the City will not act as prime integrator itself.

Vendors, whether integrated systems or best-of-breed, will be evaluated based upon a 200-point scale. Below is the recommended breakdown for the point structure.

Area	Description	Points
Proposal		
Qualifications	Evaluates areas such as experience, references, financial resources, stability, market focus, and litigation history.	15
Functional Requirements	Evaluates the vendor's performance based on their responses to the specifications presented to them in the RFP. Each major module will be evaluated separately.	25
Infrastructure	Evaluates the vendor based on their approach to hosting the solution, whether City-hosted or Cloud-based.	10
Service & Maintenance	Evaluates the vendor based upon their service and maintenance proposal, including availability of help during the City's hours of operation, availability of Web-based tools and support, etc.	10
Acceptance	Evaluates the vendor based on their ability to commit to system performance and testing requirements.	10
Implementation	Evaluates the vendor's proposed implementation plan and project manager.	10
Contractual	Evaluates the vendor based upon their willingness to comply with the City's terms and conditions.	5

Area	Description	Points
Pricing	Comparative analysis of pricing based on all vendors' responses. This may be adjusted as part of the Best & Final Offer process.	15
Proposal Total		**100**
Demonstration	Awards points based upon evaluation of the vendor demonstration by the Selection Committee.	75
Reference Checks / Site Evaluation	Evaluation of vendor based upon reference calls and site evaluations made by the City.	25
Evaluation Total		**200**

Cost Containment Strategy

In order to contain costs through the project, the City will pursue the following tactics:

- Engage the vendor in business process reengineering, and discussion and adoption of best practices recommendations.
- Require the vendor to provide a fully-configured system, instead of spending significant time and money to train City staff to do this while doing their regular jobs.
- Target data conversion investments where they present the highest, long-term value.
- Look for options so that payments are evenly spread over a 3-5 year period.
- Negotiate maintenance payments to start as late in the implementation as possible.
- Align the payment schedule for services with critical milestones with a retainage to be paid out upon final acceptance of each module.

Risk Mitigation Strategy

Business Process Changes & Resource Risks

The City selected the HTE system many years ago. Since then, best business practices have changed and have been codified in the newly available ERP systems. The City's current business practices were codified in the old system; and in many cases, the Departments implemented workarounds to accommodate changing business practices.

It is expected that any new system selected will cause some change to the City's business practices. Consequently, the project must be staffed with subject matter experts who are knowledgeable in the City's business, understand the day-to-day processes, and empowered to make changes in the City's business processes. They must understand the objective the City wants to achieve and be flexible in how the City achieves that objective. Typically, these resources are supervisory level staff.

It is expected that each of the major modules will take approximately 9-12 months to implement. For each module, at least one full-time equivalent (FTE) resource will be involved in implementation an average of 50% of the time.

This will put a significant strain on the supervisory level resources across the City for most of the project. Planning and budgeting to back-fill positions during this transition will help mitigate the risk involved in managing this change.

Technical Resources

ERP System Administrator

The IT Department currently has one System Administrator to support the HTE platform. Any replacement system will have more modern and complex technologies and is likely to involve two or more systems to cover required functionality. It is recommended that **an additional System Administrator** be added to staff to support the overall municipal administrative system environment. In addition, the City must ensure that the current System Administrator is provided with the necessary training to support a more modern architecture.

GIS Analyst/Database Administrator

Today, modern ERP systems are GIS centric with addressing layers and location data as a core database for many of the departments' functional needs. This new expanded GIS database will need the support of **one full-time dedicated GIS Analyst/Database Administrator** to maintain an accurate GIS database as well as work with operational departments defining new layers within the system.

Subject Matter Experts (SMEs)

During the implementation process, one (1) SME will be required for each functional area/ department (e.g., Finance, HR, UB, etc.). This individual will be responsible for assisting the vendor with understanding how the City does business, validating system configuration, and testing the system, as well as completing any additional tasks assigned.

Project Implementation Timing & Phasing

The City will control how the system is implemented. The timing of module deployment is typically critical for Finance, whose reporting needs are hampered by the existing system. Project timing must take into consideration critical, peak work periods (e.g., fiscal year end, CAFR development, budget development) as well as vacations and holidays.

The typical project implementation phasing is shown below:

- Finance and Document Management
- Human Resources, Payroll and Time & Attendance
- Utility Billing & Citizen Portal
- Community Development (consider)
- Work Orders/Asset Management (interface)

In order to mitigate implementation risks, the City will look to avoid a big-bang approach to implementation. This approach is where all modules are implemented and go-live at the same time. While this may seem intuitively desirable, it places a maximum amount of strain on technical and project management resources and increases the potential for project failure or delay significantly.

Technical Direction

Technical Standards

The City should require that the selected vendor support the technology standards outlined in the Technical Infrastructure Review section.

System Modules

The City will be looking to replace the existing system with a modern system that can support the following modules. Some departments will assess after demonstrations whether the new selected solution meets their functionality needs or integrate with the existing softwares.

ERP Module	Departmental Owner	Current	Migration Decision
Finance and Accounting	Finance	HTE	Procure in ERP
Accounts Receivable and Cash Management	Finance	HTE	Procure in ERP
Purchasing	Finance	HTE	Procure in ERP
Human Resources Management and Payroll	Human Resources	HTE	Procure in ERP
Applicant Tracking and Selection	Human Resources	CivicHR	Consider Replacement
Timekeeping	Human Resources	Executime	Consider Replacement
Utility Billing	Finance	HTE	Procure in ERP
Work Orders/Asset Management	Public Works	Cartegraph	Interface with Cartegraph
Community Development	Development Services	TRAKiT	Consider Replacement
Document Management	City Secretary	FileBound	Consider Replacement
Citizen Portal	Multiple	None	Procure in ERP

Interfaces

The City desires to interface the replacement ERP system with as few systems as possible. Each system will either be interfaced with the selected ERP through an API (Application Programming Interface, automatic) or a Manual Data Upload/Entry process.

System	Function	Departmental Owner	Interface Type
Cartegraph	Work Orders/Asset Management	Public Works	API for Labor Rates/Pay Tables
CivicHR	Applicant Tracking and Selection	Human Resources	Manual (if not replacing)
BenTek	Benefits Administration	Human Resources	API (if not replacing)
Executime	Timekeeping	Human Resources	API (if not replacing)
Bonfire	Bid Management	Purchasing	None
TRAKiT	Community Development	Development Services	API for Financial Transactions (if not replacing)
MyGov	Code Enforcement	Neighborhood Services	Manual (if not replacing)
Inspect2Go	Restaurant Inspections	Neighborhood Services	Manual (if not replacing)
FileBound	Document Management	City Secretary	API (if not replacing)
GovQA	Public Information Requests	City Secretary	Manual
ESRI	GIS	IT	API
SeeClickFix	Citizen 311	Multiple	API for Utilities Work Orders (if not replacing)

Field Automation

The City is open to deploying field automation devices where an obvious improvement in efficiency and effectiveness will result.

Website Integration

The City will look for areas for website integration with CivicPlus, specifically:

- Applicant Submission (if replaced)
- Citizen Self-Service, including credit card payments
- Business Self-Service, including credit card payments.

Electronic Payment

The replacement ERP system must be capable of accepting credit card payments through IVR as well as online.

Data Conversion

The City has built a variety of methods to utilize the aging HTE system. This has resulted in data being stored in the multiple databases, but also in other systems (e.g., FileBound, Share Drives, Excel). Some of this data is not "clean", that is, the data would require manipulation by the City staff before it would be worthy of conversion into the new system. This is the result of a variety of issues, principally:

- The need for redundant data entry
- Lack of address validation requirements by the system
- Lack of formal taxonomy (indexing structure) for scanned documents

When making any decisions about what data is converted, our chief goal is to ensure that the new system maintains its integrity and is not populated with data that brings the system's utility into question by the users. If the City decides that data will be converted into the new system, it is critical that the data be examined closely, and cleanup performed well in advance of conversion.

Of the many components of an ERP implementation, one of the most complex and highest risk is data conversion. In order to mitigate this risk, the City will pursue several tactics, including:

- Early Planning – Early evaluation of data will be converted allow for extra, focused time to be spent on any necessary cleanup on that data. While a few vendors will have scripts to assist with data cleanup, none will assist in the cleanup of data prior to conversion; they consider this the City's responsibility.

- Examining Options – As part of early planning, the City will evaluate options, including

  o Cleaning and converting some of its current data; targets should include the Chart of Accounts, vendor files, position control information, Utility Billing address files, open permits, open code cases. The integrity of this data should be reviewed as soon as possible and, if necessary, subprojects to clean them up should be initiated.

  o Dumping low value or unreliable data to a SQL database and building a search engine to retrieve data when required.

  In areas where data is known to be unreliable, the City should consider starting with only barebones data required and avoiding the introduction of error-prone data into the new system.

- Targeted Data Conversion – The City will target only that data that brings the highest, long term value to the City for conversion.

As the project unfolds and conversion costs and alternatives become known, the City will need to complete the table below, identifying what data it will convert into the new system, how it will access other historical data currently in the system.

Data to Convert	Description	Current Data Location	Condition of Data		Plan: Years to Access through…		
			Clean	Needs Cleanup	ERP	LaserFiche	Legacy
Accounting – Actuals	General ledger summary balances	HTE					
Accounting – Budgets	General Ledger budgeted account balances	HTE					
Accounting – Standard COA	Chart of Accounts	HTE					
Accounts Payable – Checks	Check History	HTE					
Accounts Payable – Invoices	Invoice History	HTE					
Accounts Payable – Vendors	Vendor List	HTE					
Accounts Payable – Contracts	Contracts List	HTE					
Accounts Payable –Purchase Orders	Open purchase orders with encumbrances	HTE					
Project Grant Accounting – Actuals	Project& Grants – actual account summary balances	HTE					
Project Grant Accounting – Budgets	Project& Grants – budgeted account summary balances	HTE					
Human Resources – Certifications	Employee Certifications and Expirations	HTE					
Human Resources – Education	Employee Education History	HTE					
Human Resources – Payroll Deductions	Employee Deductions	HTE					
Human Resources – Payroll Accrual Balances	Employee Accrual Balances	HTE					
Human Resources – Payroll Accumulators	YTD, QTD, MTD Accumulators	HTE					
Human Resources – Payroll Check History	Payroll Check History	HTE					
Human Resources – Payroll Earning/Deduction History	Payroll Earnings and Deductions History	HTE					
Human Resources – Applicant Tracking	Applicants and Job Openings	HTE					
Human Resources – Payroll Personnel Action History	Personnel Actions History	HTE					
Human Resources – Payroll Position Control	Payroll Position Control and History	HTE					
Human Resources – Payroll State Retirement Tables	Employee retirement	HTE					
Human Resources – Payroll - Standard	Payroll Employee Master	HTE					

Data to Convert	Description	Current Data Location	Condition of Data		Plan: Years to Access through…		
			Clean	Needs Cleanup	ERP	LaserFiche	Legacy
Community Development – Applications	Permits, Permit Applications, and Building detail	HTE					
Community Development – Violations	Complaints and Violations	HTE					
Community Development – Inspections	Inspections	HTE					
Community Development – Master Lists	Property Use/Master, owner, parcel and location information	HTE					
Community Development – Occupational Licenses Bills	Invoice amounts, payments and adjustments for associated license details.	HTE					
Community Development – Occupational Licenses Lists	Owner information, parcel number, address, license information	HTE					
Community Development – Recurring Invoices	General Billing - Recurring bill templates	HTE					
Community Development – Bills	General Bills	HTE					
Community Development – Customer Information Lists	Customer File	HTE					
Community Development – Inventory Commodity Codes	Commodity Codes	HTE					
Community Development – Inventory	Inventory Item Master List	HTE					
Utility Billing – Customer Information Records	Application, identification, personal data.	HTE					
Utility Billing – Services	Billable service records	HTE					
Utility Billing – Assessments	Assessment Records	HTE					
Utility Billing – Consumption History	Consumption History	HTE					
Utility Billing – Balance Forward Accounts Receivable	Balance Forward AR by outstanding service	HTE					
Utility Billing – Service Orders	Service Order Records	HTE					
Utility Billing – Backflow	Backflow device, type & Violations	HTE					
Utility Billing - Standard	Account Master	HTE					

Preliminary Budget

The cost estimate for replacement of the current ERP system is shown on the next page. Both On-Premises and SaaS Cloud solutions are detailed.

City of Burleson Preliminary ERP Component Budget Estimates

On-Premises

Component	One-Time Cost	Annual Maintenance	2021-2	2022-3	2023-4	2024-5	2025-6
Finance, Accounting, Budgeting & Purchasing	$ 950,000	$ 71,250	$ 950,000	$ 71,250	$ 71,250	$ 71,250	$ 71,250
Human Resources & Payroll	$ 375,000	$ 28,125	$ 187,500	$ 215,625	$ 28,125	$ 28,125	$ 28,125
Utility Billing	$ 450,000	$ 33,750	$ -	$ 225,000	$ 258,750	$ 33,750	$ 33,750
Community Development	$ 500,000	$ 90,000	$ -	$ -	$ 500,000	$ 90,000	$ 90,000
Electronic Document Management	$ 90,000	$ 6,750	$ 90,000	$ 6,750	$ 6,750	$ 6,750	$ 6,750
Advanced Reporting, Dashboarding & Analytics	$ 70,000	$ 5,250	$ -	$ 70,000	$ 35,000	$ 35,000	$ 35,000
Self-Service Payment Portal	$ 30,000	$ 2,250	$ 30,000	$ 2,250	$ 2,250	$ 2,250	$ 2,250
TOTAL	**$ 2,465,000**	**$ 237,375**	**$ 1,257,500**	**$ 590,875**	**$ 902,125**	**$ 267,125**	**$ 267,125**

Software-as-a-Service (Cloud)

Component	One-Time Cost	Annual Cloud Subscription	2021-2	2022-3	2023-4	2024-5	2025-6
Finance, Accounting, Budgeting & Purchasing	$ 380,000	$ 106,875	$ 486,875	$ 106,875	$ 106,875	$ 106,875	$ 106,875
Human Resources & Payroll	$ 150,000	$ 42,188	$ 117,188	$ 117,188	$ 42,188	$ 42,188	$ 42,188
Utility Billing	$ 180,000	$ 50,625	$ 50,625	$ 140,625	$ 140,625	$ 50,625	$ 50,625
Community Development	$ 200,000	$ 135,000	$ 135,000	$ 135,000	$ 335,000	$ 135,000	$ 135,000
Electronic Document Management	$ 36,000	$ 10,125	$ 46,125	$ 10,125	$ 10,125	$ 10,125	$ 10,125
Advanced Reporting, Dashboarding & Analytics	$ 28,000	$ 7,875	$ 7,875	$ 35,875	$ 7,875	$ 7,875	$ 7,875
Self-Service Payment Portal	$ 12,000	$ 3,375	$ 15,375	$ 3,375	$ 3,375	$ 3,375	$ 3,375
TOTAL	**$ 986,000**	**$ 356,063**	**$ 859,063**	**$ 549,063**	**$ 646,063**	**$ 356,063**	**$ 356,063**

Preliminary Schedule

The major tasks, deliverables and estimated timeframes are shown in the table below.

Task	Deliverable(s)	Estimated Timeframe
Vendor Selection		
Assessment & Plan	▪ Project Governance ▪ Project Plan ▪ Preliminary Budget & Schedule ▪ Project Charter	March 2021
Request for Proposal Development	▪ RFP Narrative ▪ RFP Specifications ▪ RFP Response Forms ▪ Pre-Bid Conference Call ▪ Q&A Addendum(a)	April 2021
Issue RFP	▪ RFP ▪ Pre-Bid Conference Call ▪ Q&A Addendum(a)	April 2021
Proposals Evaluation	▪ Evaluation Criteria ▪ Evaluation Matrix	May 2021
Short List Notification	▪ Recommendations ▪ Short List Invitations ▪ Short List Rejections	May 2021
Vendor Demonstrations	▪ Evaluation of Vendor Demos ▪ Collation and Reporting of Selection Committee Evaluations	June/July 2021
Reference Checks / Site Visits	▪ Perform Reference Checks ▪ Visit Reference Sites ▪ Evaluation of Vendors	July/August 2021
Vendor Selection	▪ Recommendation for Vendor Choice	August 2021
Contract Negotiations	▪ Contract Negotiations with Vendor ▪ Statement of Work	September 2021
Recommendation to Council	▪ Recommendation ▪ Signed Contract	September 2021
Phased Module Implementation		
1. Finance & Document Management		January 2022 – December 2022
2. Human Resources/Payroll		January 2023 – December 2023
3. Utility Billing		June 2023 – May 2024
4. Community Development		January 2024 – December 2024

Appendix A – Project Charter

Section 1: Project Summary

Project Description

Project Title	Integrated ERP System Replacement
Brief Project Description	
Sponsoring Entity	City of Burleson
Version	0.1

Project Background

The City of Burleson is currently seeking to replace its current HTE application environments, including: Finance, Utility Billing, Purchasing, Human Resources, Payroll, Documents Management and possibly Development Services.

Proposals are being sought through this RFP for a project that includes acquisition of:

- Finance Capabilities (i.e., General Ledger, Budget, Capital Project & Grant Accounting, Accounts Receivable, Bid Management, Requisitions, Purchasing, Contract Management, Accounts Payable, GASB 34, General Financial Reporting, and Cash Receipting)
- Utility Billing (i.e. Premises, Customer Accounts, Service Requests, Rate Structures, Adjustments, Payments, and Collections)
- Human Resources Capabilities (i.e., Personnel, Payroll, Timekeeping, Benefits, Applicant Tracking, Performance Management, Expense Reimbursement)
- Planning/Zoning/Building Capabilities (i.e., Planning/Zoning, Permits & Inspections, Business Licensing, Special Assessments, Code Enforcement)
- Utility Billing Citizen Self Service and Online Payments,
- Integrated and robust Field Mobility Capabilities
- Employee and Vendor Self-Service Capabilities
- System Integration Services
- Interfaces to certain City systems
- Training
- Maintenance Services.

The City plans to implement an industry standard, commercial-off-the-shelf (COTS) modular software solution. The City has no preference on hosting, either a software-as-a-service or self-hosted solution will be acceptable depending on cost. The City has standardized on the Microsoft Operating Systems platform and, as such, is seeking solutions that currently operate in the Windows 10 desktop and mobile environments. Self-hosted options must utilize Windows Server 2016 and 2019.

It is critical to the success of this project that the vendors perform extensive business analysis and provide process improvement recommendations to take full advantage of the proposed solution's potential. Solutions that are inflexible and require complete changes to the City's existing process are unlikely to be selected. A balanced approach that allows for configuration changes to adjust the software to meet our needs is the most likely to succeed.

Business Drivers

The business drivers for this project are centered around the need to replace an obsolete system that:

- Wastes significant time in redundant entry
- Requires significant effort in workarounds
- Does not provide an intuitive user interface or work process and, therefore, is difficult to train on and achieve proficiency in its use
- Does not provide easy reporting.

Any new system(s) will address the above issues. However, the current system captures minimal data to meet minimal reporting needs; new systems have greater data demands to meet the increased demand for information both for managers to make just-in-time decisions, and for management in its oversight of the City's operations.

The main objectives of this project include procuring a system that will:

- Encourage new process development
- Reduce/eliminate redundant data entry
- Automate and integrate functions currently requiring manual intervention
- Automating manual processes to reduce staff workloads
- Moving to a system with tight integration between field electronic data collection and the backend database
- Improved data analysis and reporting through easy to use, customizable reporting tools and modern analytical toolsets.

The purpose, therefore, of acquiring a new ERP system is to allow the City to manage growth of staffing through automation. **While some staff may be able to be redeployed, or their roles redefined, the new system(s) should result in slowing staffing increases but will not result in overall staffing decreases.**

Project Success Criteria

The project will be viewed as successful if it results in:

- Having a nimble and flexible system that integrates with other key applications in order to ensure streamlined workflow increasing effectiveness and lowering overall risk
- Modernizing the existing systems architecture in order to minimize long term support and development costs
- Providing modern mobile capabilities to the field in order to streamline the workflow from data collection to prosecutor submission
- Provide citizen self-service capabilities for Online Payments, Utility Billing, and possibly Licenses, Permitting, Inspection Status Review, Maintenance Request Reporting, and other functions.

Project Constraints

The project must operate within the known constraints identified below:

- Financial Investment
- Limited Staffing Resources, adding time pressures to the transition
- Interfaces, the cost and time to build custom interfaces for each add-on system
- Data Conversion, deciding what data and how much to convert.

Project Scope

From initiation to close, the project will encompass the elements shown in the work breakdown structure, shown below summarized at Level 2.

1. Project Initiation
    - 1.1. Need Identification
    - 1.2. Options Analysis
    - 1.3. Business Case/Feasibility Development
    - 1.4. Funding Determination
    - 1.5. Management Review & Approval
    - 1.6. Selection Project Governance Setup
2. Requirements Definition & Planning
    - 2.1. Conceptual Planning
    - 2.2. Request for Proposal
    - 2.3. Vendor Selection
3. Project Implementation
    - 3.1. Design & Planning
    - 3.2. Hardware & Network
    - 3.3. Customizations and Interfaces
    - 3.4. Finance Application
    - 3.5. Human Resources Application

3.6.   Accounts Receivable/Utility Billing Application

3.7.   Community Development Application

3.8.   Citizen Portal/Citizen Relationship Management Application

3.9.   End User Training & Documentation

4. Project Control

4.1.   GANTT Updates

4.2.   Project Status Reporting/Meetings

4.3.   Project Communications

4.4.   Risk Monitoring

4.5.   Change Control Meetings & Reporting

5. Project Close

5.1.   Project Documentation

5.2.   Lessons Learned Discussion & Documentation

5.3.   Final Project Report

5.4.   Team Celebration

Section 2: Project Governance

Project Stakeholders

The stakeholders, those individuals and organizations that have a vested interest in this project, are listed below:

- Executive and Legislative
  - City Manager
  - City Secretary
  - City Council
  - Legal
- Communications
- Finance
  - Accounting
  - Budget
  - Purchasing
  - Utility Billing
  - Payroll
- Human Resources
- Development Services
  - Building Permits & Inspections
  - Planning & Zoning
- Neighborhood Services
- Public Works
- Information Technology

Project Organization

The project organizational structure is shown below. Each of the roles is discussed below.
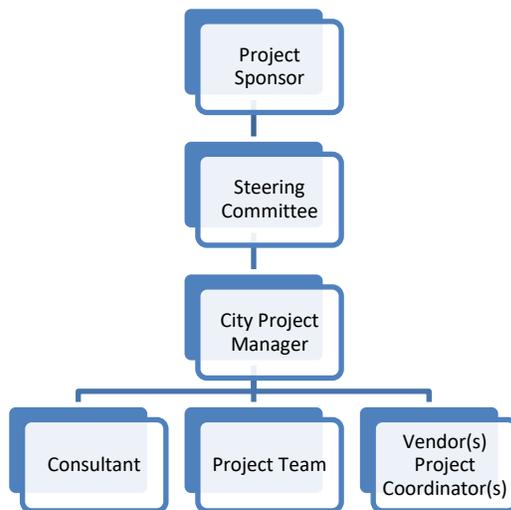
Project Sponsor

The project is sponsored by Deputy City Manager Robert Ranc. The project sponsor is responsible for providing executive level support for the project with the City.

Project Managers, Consultant and Vendor Project Coordinator

The leadership roles for the project, namely the Project Managers, Consultant and Vendor Project Coordinator are shown below.

The Project Managers will provide day-to-day supervision and management of the project. They will also review decisions to be made in light of the City's needs, operating practices, and culture.

The Consultant will provide risk management support to the Project Manager, assisting to ensure that the project remains on-budget and on-schedule and that risks are identified and mitigated early in the project.

The Vendor Project Coordinator will be the principal interface to the project, coordinate all vendor project resources, and have day-to-day supervision and management responsibilities for accomplishing the vendor's obligations for the project.

City Project Managers	Robert Ranc and Mark Eder
Consultant	TBD
Vendor(s) Project Coordinator(s)	TBD

Steering Committee Mission

The Steering Committee is empowered by the Project Sponsor to executive oversight, advocacy, support and decision making; specifically, to steer the project and oversee those tasked with day-to-day management of the project. Specifically, the Steering Committee will:

- Assign roles and responsibilities for the project
- Oversee the planning, design and execution of the project
- Recommend policy and workflow changes
- Take remediation action when deemed necessary to keep the project on track and on budget
- Educate the user population regarding the status and intent of the project.

Steering Committee

The Steering Committee members for the project are shown below.

Name	Area	Phone	Email

Project Team

The Project Team members have been assigned by the City to the project and will drive the day to day accomplishments of the project. The members of the Project Team are shown below.

Name	Area	Phone	Email

Vendor Project Members

The vendor project members are identified below. *[To be updated upon selection.]*

Name	Area	Phone	Email

Project Responsibility Matrix

The responsibility matrix shows the areas of responsibility for each component of the work breakdown structure.

Stage	Description	Project Sponsor	Steering Committee	Project Manager	Consultant	IT Department	Purchasing	ERP Software Vendor	Finance	Human Resources	Utility Billing	Community Dev.	Public Works	Communications/PIO
1.0	Project Initiation	A				C	C		C	C	C	C	C	C
2.0	Requirements Definition & Planning	A	C	R	R	C	C		I	I	I	I	I	I
3.0	Project Implementation													
3.1	Design & Planning	I	I	A	R	R	C	R	C	C	C	C	C	C
3.2	Hardware & Network		I	A	R	R		R						
3.3	Customizations & Interfaces	I	I	A	R	R		R	C	C	C	C	C	C
3.4	Finance, UB & HR Application	I	I	A	R	R		R	R	C	C			
3.5	Human Resources Application	I	I	A	R	R		R	C	R				
3.6	Accounts Receivable/Utility Billing Application	I	I	A	R	R		R	C		R			
3.7	Community Development Application	I	I	A	R	R		R	C			R		
3.8	Asset Management/Work Orders Application	I	I	A	R	R		R	C	C	C		R	R
3.9	Citizen Portal/CRM Application	I	I	A	R	R		R	C		C	C	C	R
3.10	End User Training & Documentation	I	I	A	R	R	C	R	C	C	C	C	C	C
4.0	Project Control	I	I	A	R	R	I	R	I	I	I	I	I	I
5.0	Project Close	I	I	A	R	R	C	R	I	I	I	I	I	I

Term	Description
Responsible	Does the work to complete the activity.
Accountable	Ultimately answerable for the correct and thorough completion of the activity, and the one who delegates the work to those responsible.
Consulted	Individuals whose opinions are sought, typically subject matter experts, with whom there is two-way communication.
Informed	Individuals who are kept up-to-date on progress, often only on completion of the task or deliverable, with whom there is a one-way communication.

Section 3: Project Tracking

Project GANTT

The project manager will develop and maintain a project GANTT, indicating the tasks, resource assignments, and dates for start and completion for the project. This will be reviewed at monthly conference calls during selection, and weekly conference calls during implementation.

Project Milestones and Deliverables

The major milestones and deliverables for the project are shown below with expected dates of completion, where known. Currently, the details are only known through the start of implementation.

Milestone	Date
Assessment & Plan Completion	March 2021
Request for Proposal Completed	April 2021
Request for Proposal Issued	April 2021
Vendors Proposals Received	May 2021
Short List Vendors Recommended	May 2021
Vendor Demonstrations Completed	July 2021
Chosen Vendor Selected	August 2021
Contract Negotiated	September 2021
Implementation Begins	January 2022
Anticipated Implementation Completion	December 2024

Section 4: Project Change Management & Communications

Project Policy and Workflow Changes

As policy and workflow changes are identified, these will be brought to the attention of the Steering Committee for review under Change Management guidelines provided in this section.

Project Risks & Dependencies

As risks are identified, they will be submitted to the Steering Committee for review and possible mitigation actions with the following information:

- Risk characteristics by name and impact
- Risk identifier
- The name of the individual raising the risk
- The date the risk was raised
- A target risk response date (when must this risk be analyzed and addressed).

The Steering Committee will follow the following actions in consideration of identified risks/dependencies; the Committee may choose to remit these to a sub-committee as necessary:

- The risk is reviewed according to established criteria (category, probability, impact & target values).
- Risk response strategies are devised (acceptance, avoidance or mitigation).
- Risk response strategies are recommended to the Steering Committee for review and approval.
- The Steering Committee will direct the Project Manager to implement and document the risk response strategies as needed.

Project Change Management

The Project Manager will assign an individual who will be in charge of change management for the duration of the project. The Steering Committee will oversee this person and make sure he/she does the following:

- Establishing a process for change management submission, review and approval
- Oversee the implementation of approved changes.

Any project change being submitted to this individual must be accompanied by the following information:

- Change Description
- Implications of the Change vs. taking no action
- Value/priority of the change
- Required timing of the change
- Estimated cost of making the change in terms of resources (hours) and money
- Estimated impact on the project schedule
- Intended impact of the change (e.g., benefits, consequences)
- Effect of change on the project plan and/or project deliverables.

Project Reporting and Communications

The Project Manager will report to the Steering Committee through a Project Status Report which will be updated on a weekly basis. Reporting will include budget and schedule actual vs. planned, as well as any project constraints and risks.

The Steering Committee will direct the Project Manager to manage the project communications, in accordance with the Project Responsibility Matrix. In addition, the Steering Committee will direct its members, and the members of the Project Team, to educate and encourage users with regards to the project, and promote the anticipation of the new system, participation in its configuration, and usage after implementation.

Section 5: Document History

Version Tracking

The table below is used to track versions reviewed and approved by the Steering Committee for release.

Version #	Release Date	Changes from Previous Version	Author
0.1			S. Gousie

Appendix B – Digital Government
Enterprise Architecture

Introduction

This appendix provides a basis for understanding the underlying elements of the Enterprise Architecture that support the transition to Digital Government.

Definition of the Enterprise Architecture

Over the past 20 years, one of the major emphases of government Information Technology planning has been the adoption of an enterprise architecture to help align IT standards with business needs. Enterprise-wide standards in local governments have been used to help achieve some of the prescriptive goals of digital government such as sharing and integration of information. Since many digital government applications (e.g., ERP, GIS) tend to be cross-departmental in nature and involve secure transactions, it is important to have enterprise-wide standards in place before implementing specific digital government measures. There are also infrastructure standards that are especially important to many digital government applications such as online transactions including the establishment of credit card payment capability and associated policies, technologies to support secure transactions such as public key infrastructure, and the establishment of common software standards.

The concept of an Enterprise Architecture was originally defined by the National Institute of Standards (NIST) in their Memorandum 97-16 (Information Technology Architectures). In this guidance, a five-component model was adopted by NIST that consisted of:

Business Architecture

- Business Processes: This component of the Enterprise Architecture (EA) describes the core business processes which support the organization's missions. The Business Processes component is a high-level analysis of the work the City performs to support its mission, vision, and goals, and is the foundation of the EA. Analysis of the business processes determine the information needed and processed by the City. This aspect of the EA must be developed by senior managers in conjunction with IT managers. Without a
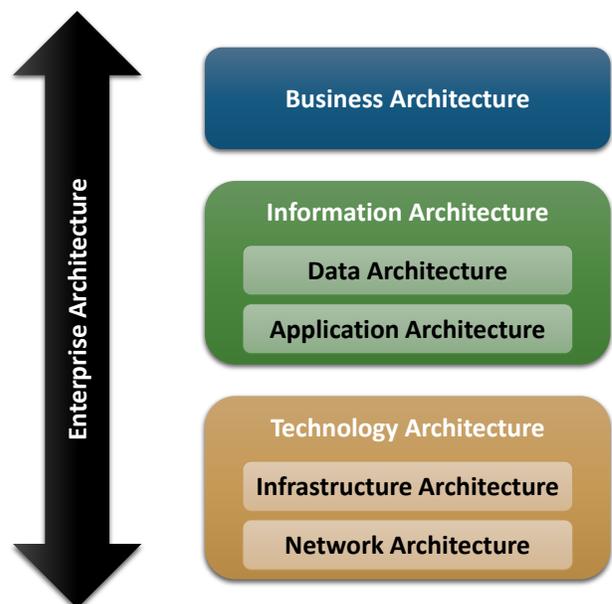
thorough understanding of its business processes and their relation to the City's missions, the City will not be able to use its EA effectively. Business processes can be described by decomposing the processes into derivative business activities. However, the processes remain at a high enough level to allow a broad focus, yet sufficiently detailed to be useful in decision-making as the City identifies its information needs. Examples would include the payroll process, purchase requisition process, permit request process etc.

▪ Workflows and Relationships: This component analyzes the information utilized by the City in its business processes, identifying the information used and the movement of the information within the City. The relationships among the various flows of information are described in this component. These information flows indicate where the information is needed and how the information is shared to support mission functions. Examples include, the workflow for receiving a certificate of occupancy. The workflow will touch multiple processes including the submission of a request for inspection, and review by multiple city departments such as Fire and Community Development.

Information Architecture

▪ Application Architecture: The Applications component identifies, defines, and organizes the software systems that capture, manipulate, and manage the business information to support mission operations. It also describes the logical dependencies and relationships among business activities. Examples may include the Utility Billing Module, Applicant Tracking Application, or the Permit Tracking Application.

▪ Data Architecture: This component of the Enterprise Architecture identifies how data is maintained, accessed, and used. At a high level, the City defines the data and describes the relationships among data elements used in the City's information systems. In order to achieve the data architecture, the following models must be developed and incorporated within application design.

  o Conceptual model contains key entities and relationships and presents a high-level look at all of the entities within an organization. The Enterprise data model were built upon the Conceptual Model by adding an entity relationship diagram. This model is part of the business model and shows what classes of information are required to support management and business intelligence purposes.

  o An enterprise logical model (EDM) is a fully attributed entity relationship diagram (ERD), which shows each entity, its relationship to other entitles and specifies the applicable business rules.

  o Dimensional Model, represents facts and dimensions, which are used for reporting and analytical purposes.

  o Physical Data Model, is the final representation of the data base structures that will be generated from the model. It contains the detailed specifications for the database

design and, in a model driven environment. Physical data models specify the data base design and should always be synchronized 100% with the database.

Technology Architecture

▪ Technology Infrastructure: The Technology Infrastructure component describes and identifies the physical infrastructure including, the functional characteristics, capabilities, and interconnections of the hardware, software, and communications, including networks, protocols, and nodes. It is the "wiring diagram" of the physical IT infrastructure.

In the subsequent 20 years, the NIST EA framework has been further modified to address the evolving needs for the management of the delivery of information services. These include:

▪ The Zachman Framework for Enterprise Architectures — Although described as a framework, it is actually more accurately defined as a taxonomy and thus difficult to actualize.

▪ The Open Group Architectural Framework (TOGAF) — Although called a framework, it is more accurately defined as a process and provides only a methodology for approaching EA.

▪ The Federal Enterprise Architecture — Can be viewed as either an implemented enterprise architecture or a proscriptive methodology for creating an enterprise architecture.

The history of the field goes back 20 years, but the field is still evolving rapidly. We have adopted the fundamental NIST model due to its straightforward simplicity and extensive adoption.

The following provides a description of how the Enterprise Architectures have evolved over the past 40 years and the current state of the art of City Application Architecture.

Evolution of the Enterprise Architecture

Centralized Proprietary Architecture

The early days of computing were dominated by centralized mainframes. These centralized behemoths provided for computation, storage, and input/output through separate major components. These systems supported the Business Architecture with completely defined Information and Technology Architectures provided by a single vendor (e.g., IBM AS/400 (iSeries), IBM MVS, DEC VAX/VMS). These systems were first offered in the early 1970s and provided a more economical computing approach through utilization of the central processor for both computation and input/output (I/O), and by offering easier to use software systems requiring less user support. Such proprietary systems are now on the wane. Although systems such as the IBM iSeries remain popular, sales are declining, and some vendors are rapidly exiting the arena. Indeed, the IBM iSeries is the only older proprietary minicomputer which remains viable today.

Client/Server Architecture

The mainframe systems evolved towards the more distributed Client/Server (C/S) architecture. Client/Server involved the segregation of the single mainframe application so that it operated between a client application operating at the desktop and a server application executing at the backend server. The user application provides a graphical user interface (GUI) with an "intelligent front end" user workstation (client), communicating over a local area network (LAN) or wide area network (WAN) to access the shared "back end" processor (server).

This architecture consists of four logical layers: the application, the server, the client and the network.

- Application: The first and most important component of the architecture is the application. The application is the program that runs on either the client or the server. It determines how the user perceives the Operating System. An application exploits the client's user interface for presentation to the user and exploits the server for data services and some processing. However, the shifting of application logic to the client side has thrown the Operating System model off balance forcing ever increasing processing requirements on the client. In order to maximize the utilization of the server, careful application partitioning design and development is critical in order to control the ever-increasing workstation processing requirements and costs.

- Server: The back-end system, the server platform, must be selected in conjunction with the database server software. Critical issues in this platform include server capacity, database software meeting user performance requirements, and the server operating system supporting the chosen database software. Operating systems such as Windows Server and UNIX provide advanced features such as pre-emptive multitasking, multithreading, virtual memory management, and high-performance Input and Output, which are critical to allowing high performance databases to operate.

- Client: The client is one of the most important aspects of the overall Operating System, yet most often overlooked. The client is where most of the application processing occurs and where the user perceives the overall system. Important aspects to consider when designing the client are the selection of a front-end development system that meets the programmer, database server, and user needs. Tools such as Visual Basic and SQL server are instrumental in providing effective applications; however, these tools must be selected in conjunction with the processor, operating system, and user interface.

- Network: A common characteristic of distributed clients and servers is their communications capability provided by the Internetwork. Within the integrative role provided by the Internetwork, the concept of the Operating System computing is to assure that end users have transparent access to any computing resource needed across the City.

- Internetwork: The Internetwork which consist of a Local Area component or LAN, removes requests from the client to the server, and then transports the results back to the client. The

Operating System (O/S) design requires the selection of the type of network, (e.g., Gigabit Ethernet, T-1), a transport protocol, and the networking equipment.

This architecture combines a variety of closely integrated commercial products to establish a fully supported system solution. The major benefits of Open Systems Client/Server Architecture are:

- Flexibility - client pieces can be added or changed without disturbing existing server data and services.

- Interoperability with legacy systems – Existing systems can find a server role (or a client role if appropriate). This allows old and new systems to retain connectivity and integrity.

- Speed of new application deployment – Given a stable server core, most new applications will boil down to deploying a client piece that supports a new process or product concept. This can be accomplished very fast with today's advanced client development tools.

These advantages of durability and flexibility of architecture drive the guidelines for good client server design. In essence, core, fundamental data and programs (objects) should reside on the server, whereas presentation, process models, end calculations, etc. should reside on the client. The client side typically gathers and validates data and gives visual feedback, while the server side responds to client requests for data and services.
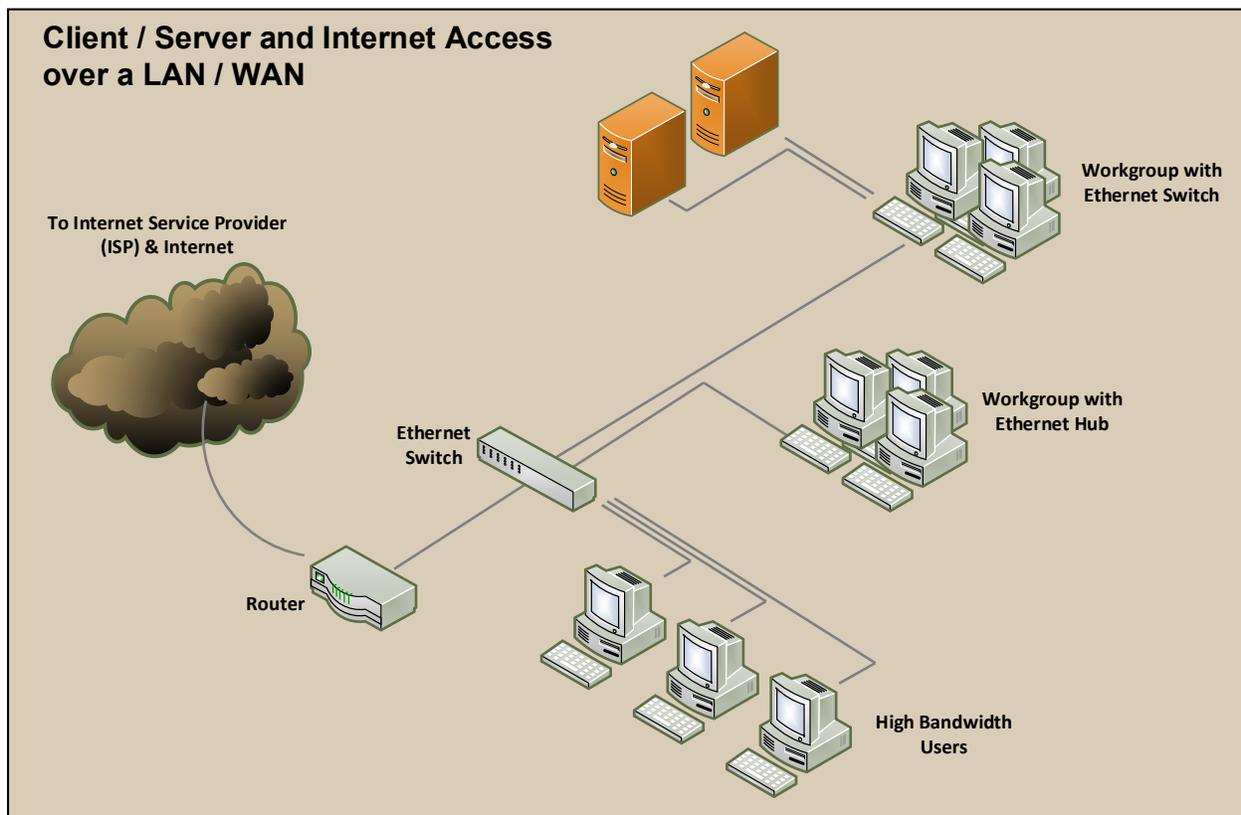
However, to obtain these advantages, one must deal with the higher complexity of Open Systems because they have many more components than centralized predecessors. The networks,

operating systems, database servers, user interfaces, front-end development tools, middleware, processor types, standards, and design methodologies all complicate the client/server strategy.

Critical issues with Client/Server architecture implementation are:

- Design – Most benefits from client server depend upon getting the functional split right. The server side must be stable and fundamental (should model true business objects), and communications between client and server should be minimal to accommodate network bandwidth constraints.

- Change Management – Changing to client server requires a new way of thinking about systems development, with emphasis on what to reuse and what to buy, rather than on what to build. Accomplishing this change in thinking can be a major challenge.

Web Services Architecture

Web Services merges the strengths of the centralized mainframe with the flexibility of distributed client/server. Applications are resident on a central server and are accessed through thin clients or browsers on the desktop. However, these applications do not go out over the Internet; they reside on a server on an organization's network and operate within its intranet. These applications utilize the latest technologies, such as .Net, Java and HTML5, to maximize interoperability and data sharing capabilities. Though WEB services is where the general industry has been heading, the advent of mobility and tablets has altered the direction towards HTML5 based WEB services. However, vendors are not expected to make the full migration to HTML5 web services for another 5 years.

Web Services systems, like client/servers, utilize a client based "front-end" application called a web browser (e.g., Internet Explorer, Chrome). The application requests discrete information "pages" from the Web server and displays them on the browser at the user workstations. Users do not have to know how to connect to a server, or even where a server is located on a network. Older, powerful mainframe or client/server applications become easier to use.

There are several distinguishing features of Web Services applications:

- Use TCP/IP (transmission control protocol/Internet protocol) for both wide-area and local-area transport of information,

- Use HTML (hypertext markup language), XML (Extensible Markup Language), SMTP (Simple mail transport protocol) and other open Internet-based standards as the means of moving information from clients to servers

- Are based on Web services standards such as Web Services Description Language; SOAP (Simple Object Access Protocol); and Universal Description, Discovery and Integration, or UDDI

- Are completely owned by the City and not accessible from the Internet-at-large by the general public.

Many government organizations have already implemented intranets and have begun to realize some of the following benefits by using the web services technology.

Reduced Operating Costs

- Cost-effective solutions. Intranet applications can be developed more quickly than conventional applications, so the costs are lower and the time to completion is shorter-even when legacy databases are involved.

- Lower cost of ownership. Complex networks-those that involve a greater number of network protocols, vendors, and applications-are more expensive to own than simple ones. Intranets lead to reduced network complexity and can ultimately result in lower network ownership costs.

- Lower cost of training. Intranet applications share a common interface-easy-to-use web browser-so employee application training is easier and less expensive.

- Electronic processing saves money. The price of a paper-based purchase request is $58, compared with about $10 when done electronically. (Source: Concur Technologies).

Improved Communications

- Make it easier for employees to send and receive information by providing e-mail services to the entire staff. Create an internal website for posting staff information such as eligibility guidelines for health and human services programs, technology support information, benefit information, worker safety information, policies regarding vacations and leaves, and agency guidelines and procedures.

- Government employees can easily find guidelines and information, they can more quickly and accurately respond to constituents and taxpayers.

More Efficient Forms Delivery

Reduce the cost of printing and distributing forms by posting them – in a format suitable for downloading – on an internal website. Introducing a revised form is also easier, because you simply have to post the new version instead of replacing the current inventory.

Simplified Report Generation

Make it easier for employees to generate reports by providing intranet-based applications that query the database to answer the most frequently asked questions. Creating a report can be as simple as "point and click" when the applications themselves perform the actual database query.

Easier Applications Deployment

- Human Resources: Manage payroll, time keeping, personnel, and benefits electronically on a government-wide basis, not agency by agency. Also track training and professional credits in the same way.

- Purchasing: Use standardized and easy-to-develop electronic forms to handle routing, approval, processing, and payment.

- Emergency Services: Maintain specific local information for community initiatives. Also integrate community-specific information with data from other departments.

- When citizens or customers can get the information and forms they need on their own, government employees have more time to address complex problems.

These application transitions have caused a similar transition in the network environment, such that the network traffic will be dramatically altered.

In such a dynamic environment, the Transport Network both local area networks (LANs) and wide area networks (WANs) must support high-speed transmission to satisfy the response time requirements of the applications. Given the growing trend of traditional as well as new applications to send large quantities of burst-oriented data from LANs across the WAN, the network must now be able to provide high-capacity bandwidth on demand.

It is recommended that web services applications meet the following minimum requirements before being considered:

- Use a standardized SQL database (e.g., Microsoft SQL, Oracle)

- Support XML, HTML5 web services

- Be cross-browser compliant, including mobile browsers.

- Be capable of integrating to reporting tools (e.g., Cognos, Crystal, SSRS)

- Comply with all HIPAA security requirements.

Intranet Web Services Systems Integration

Data as we know it today is usually completely different in every single system we use. Each software system has its own database and internal "business logic" that means nothing to an external system. Because of this, we have to go to a lot of work in order to translate the data into either a common format, or to another form that the external system will understand. This translation layer can be very difficult to implement as well as time consuming (re: processor intensive) depending on the technology being used.

Since there are so many distinct systems in use today, this data translation layer has become more important in the integration of the various criminal justice systems. That is what Web services and the intranet protocol XML (eXtensible Markup Language) is all about.

Web services use standard Internet protocols and data formats to extend a component-based programming model across the Web. HTTP (the method used today by Microsoft Internet Explorer) is used to access Web services, which are Web-based components and applications built on four core technologies: XML; Simple Object Access Protocol (SOAP); Web Services Description Language (WSDL); and Universal Description, Discovery, and Integration (UDDI).

XML, a self-describing tag-based language, is the foundation of the Web services architecture. Its main value lies in the fact that it is a platform-independent data-transport mechanism. SOAP is an XML grammar that specifies how data and commands are sent between applications. WSDL is

another XML syntax that applications can use to query one another about the names and properties of the Web services that they support. UDDI is a directory mechanism for Web services that fills a role much like Active Directory's (AD's) role on a LAN. UDDI lets a Web services application dynamically discover available Web services that it can use.

Web service and XML make it possible to easily share data with anyone. This can be accomplished by a translation layer at each agencies system. While conceptually not much different than today's method of data transformation, XML makes this process very easy to implement as well as very fast. An XSLT (or XML Stylesheet Transformation) is an XML document that maintains a data mapping scheme to transform one set of data into another. Each agency wishing to share data with another simply needs to publish their schema so that the other agencies will understand their data. XML allows data from any database to be described in a universal format irrespective of vendor.

Architecture	Strengths	Weaknesses
Mainframes/ Minicomputers	▪ Simple architectural solution ▪ Maximum systems management and control	▪ Response times dependent upon system usage ▪ Unappealing user interface ▪ Proprietary solution ▪ High backlogs ▪ High maintenance and supporting resource costs
Client/Server	▪ Scalability ▪ Openness ▪ Maximum response time and performance ▪ Appealing graphical user interface ▪ Solves some weaknesses of mainframe	▪ Can be a complex solution ▪ Can put a high demand upon network bandwidth.
Web Services	▪ Leverages best of both mainframe and client/server systems ▪ Reduced operating costs ▪ Improved communications ▪ More efficient forms delivery ▪ Simplified report generation ▪ Easier applications deployment	▪ Evolving technology ▪ Some municipal application vendors have fully implemented the architecture

City Applications Architectures

Enterprise Resource Planning

The integrated suite of applications provided by the ERP comprise the Applications Architecture for the City's Administrative operations. They have been used by government over the years, operating in mainframe, client/server and now operating over Web Services architectures. The ERPs consist of an integrated suite of applications, as illustrated here.

These applications address the specific Architecture functions and have been developed by software vendors to encompass the Business and Information Architecture elements specified by NIST. The extensive development effort provided by the software vendors address many of the complex issues that the EA defines, and it provides the City with a defined architecture.

Alternatively, the City would define and develop all of the functional applications in a common platform, such as Microsoft Sharepoint. However, an internal development approach will require the City to expend extensive time and resources in developing and supporting an Information Architecture. In an environment of limited resources, especially within a municipal IT Department, it is not recommended that substantial resources be dedicated in this manner.

It is important to note that some, limited applications development resources will be needed in an architecture dominated by commercial, off-the-shelf (COTS) applications; these systems will meet most, but not all of the specific functional systems needs of the City. To close these gaps, typically in areas such as GIS, document search, integrated web applications, and systems interfaces, applications development will be needed.

The applications provide integrated process with e-commerce features to replace the existing paper routing process for functions such as: vendor interaction, bidding, requisitions, approvals, purchase order generation, fixed asset/inventory logging and accounts payable. Human Resource modules provide for applicant tracking, and payroll and personnel functions such as salary negotiations, step/range tables and pension processing. Systems currently available on the market today provide functions such as those described in the table below.

Function	Description/Components
Executive Management	Provide the ability for viewing overall and departmental actual budget status in an easy-to-use and easy to manipulate "dashboard" format.
Finance & Accounting	General Ledger: Provide displays and drill-downs. Allow the ability to track projects and grants across multiple fiscal years with an automated link to the general ledger chart of accounts. Budget: Allow the creation of the budget by using your current year's fiscal information as a starting point. Allow the ability to perform what if analysis by departments or Citywide. Allow to link personnel details to budgeted line items and associate items, such as a computer and a desk for new employees. Purchasing (including Bid Management, Requisitions, and Contracts Management): Allow user access to enter requisitions with full access to available vendors, commodities, budget balances, and frequently requested items and automatically notify all approvers by e-mail. Elimination of paper routing should be key allowing purchasing staff to view all approvals and any attachments, and with one step can convert requisitions into purchase orders and encumber the funds. The system should allow for Purchase Orders to be sent to the vendor via hardcopy, e-mail, or fax. When the item arrives, the system should automatically notify Accounts Payable. Additionally, all items purchased from certain accounts or over the fixed asset dollar threshold should automatically create a Fixed Asset record and place it in a file for review with all associated purchasing and accounts payable information. Fixed Assets: Track all information for depreciation costs to post to the General Ledger and adhere to GASB reporting requirements. Accounts Receivable/Cash Receipting: Track all payments made to the City, and provide for a single collection point for all cash receipts from peripheral systems, e.g., Parks & Recreation, Courts. This single collection point should allow citizens utilizing self-service to see all financial transactions they have with the City, and make a single payment to close them out. Treasury: Allow for tracking and management of financial assets of the City. Accounts Payable: Allow payment of existing encumbrances by choosing a purchase order, having the details default, and adjust any differences. Any new invoices should be easily added to the system and charge to the appropriate accounts.
Human Resources	Applicant Tracking: Accept job applications over the Internet, from a kiosk, or by completing a traditional application. The system should allow applicants to open positions as a link on the City's web site and allow applicants to enter their own information on a web application form with an attached resume. Allow departments can review, creation of an applicant database, run reports, and track interview information. Once hired, all information from the applicant's record should flow through the system to create the base for their employee file without any need for staff to re-enter the information. Personnel: Given the proper security, allow personnel to have access to all the information they need to know about an employee. This will facilitate their ability to answer employee or supervisor questions regarding absences,

Function	Description/Components
	training, certifications, and emergency contact information. Personnel would also include: ▪ Position Control: Allow to account and identify all the budgeted positions within the City. It should provide information on the number of Full Time Equivalents (FTEs) assigned to positions, and a description of the duties. The system should allow the ability to track the details regarding the positions and the personnel who held them. ▪ Personnel Budgeting and Projections: Allow the ability to create the next year's budget allowing increasing employee salaries for the rest of the current year. Along with the salaries, the system should allow the addition of fringe benefits so all information is considered. The system should allow salary projections to be done using an existing employee or a group of employees attached to a salary schedule and allow the calculation using percentage, dollar amount, or both, an increase or decrease to those employees' schedules, and provide a series of reports. Payroll: Allow setting up the parameters of the pay run and timecard entry, as well as calculating and running reports. In addition, allow exceptions-based payroll reporting so as to allow efficient default all of your employees' time and pay run information, leaving only the entry of personnel information who have worked outside the typical scope of their jobs. Employee Expense Reimbursement: Allow employees to electronically submit expenses for reimbursement. This should interface to payroll for payments. Features may include receipt image submission using a phone application. Benefits: Track and manage benefits information for staff, allowing for adjustments allowed. Employee Reviews: Provide a workflow for performing reviews, including templates and supervisory approval, and reporting on uncompleted reviews. Training: Track training and certification requirements for each position, with expirations. Allow for notification of employee and supervisor prior to expiration. Allow for the tracking of training and certifications taken by employees, with imaging and attachment of verifying documentation. Employee Self-Service: Allow access to all employees with a convenient web site so they can access their own employment information – anytime, anywhere. Either over the City Intranet, or from home over the Internet, the employees should have secure access to their payroll and personnel information through a web browser interface.
Community Development	Electronic Plan Review: Provide real-time review of detailed plans and regulatory documents with online examination, markup, commenting, electronic stamping and signature of plans, architectural drawings or licenses. Compare updated plans side by side or as an overlay to easily identify proposed changes. Licenses: Provide licensing management capabilities that utilize industry standards and templates for license type (e.g., business, occupational) and best practices workflow.

Function	Description/Components
	Permits: Provide ability to complete a commercial or residential building permit and keep multiple departments informed in real time. Ability to configure workflow from application to issuance of a Certificate of Occupancy, including ability to route task lists and alerts, perform fee calculations, track collections.
	Inspections: Provide Inspectors with real-time access to information, including list of inspections for the day, routing, current plans, historic permits, Code details, GIS, zoning and enforcement data.
	Code Enforcement: Provide Code Enforcement officers with the ability to create and manage cases, including attaching pictures, drawings or sketches, notes, video and sound files. Provide officers with real-time access to information, including daily job list, routing, current plans, historic permits, Code details, GIS, zoning and enforcement data. Ability to track/update status, communicate status and violations to citizens.
	Citizen Self-Service: Provide citizens with Web-based capability to submit plans, permit applications and fee payments, schedule inspections, and submit complaints.
	Field Mobility: Provide inspectors and code enforcement officers with the ability to manage cases and results for inspections using their mobile device. Ability to schedule inspections, plan routes and attach notes and photos. Provide store-and-forward capability for low/no connectivity areas.
Citizen Relationship Management	Citizen Relationship Management (CRM) solutions are designed to provide a single issues management database. The database contains all City issues and is available for use by all key City departments. Furthermore, it would be integrated with other key City systems, such as GIS, Utility Billing and Code Enforcement, so the maintenance of the data would be seamless and not require additional effort by department. Whether the issue was captured by a call center or by another department, all issues would be maintained in this single database for reference by any department.
	The CRM software solution must include address validation. Since the key for nearly all issues is the location of the issue, the system must capture accurate location information to ensure field coordinators, inspectors, monitors, etc. can locate the problem. Also, address validation is essential for identifying if the issue has already been input and is being addressed.
	The CRM software needs to be integrated with the core operational systems of the City. At a minimum, bi-directional interfaces should be implemented to:
	▪ Community Services service request/work order management system.
	▪ Code Enforcement application.
	The CRM solution should include the capability to extend the CRM system to the City web. Citizens should be able to input issues and check status via the Internet. Internet access allows citizens to be "self-served" anytime from any Internet capable computer. It should also include address validation and prompting for the closest addresses found. The citizen should be notified of status via email as an option. Given the availability to access GIS over the

Function	Description/Components
	Internet, the system might also link the citizen to GIS to locate the street, intersection or specific address.
Asset Management/ Work Orders	Asset Tracking, Management & Disposal: Ability to enter, track, manage and dispose of City assets, including attributes, cost, value (considering depreciation), location, maintenance history, and ultimate disposal.
	Work Orders: Ability to issue work orders for installation, repair, replacement, or preventative maintenance. Ability to turn service orders into work orders. Ability to track performance against work orders, including time and resources used, and mark completed.
	Fleet: The system should allow tracking how much it costs to maintain equipment and vehicles. The system should allow the tracking of all costs associated to a service order for any vehicle or equipment serviced by the City. The orders should integrate with the inventory system to pull from the existing stock in warehouse inventory to complete routine maintenance or scheduled maintenance. Costs must be integrated to the general ledger so that the user can generate reports on items that are overdue for maintenance as well as the total costs associated with a specific item.
	Inventory: This function should be fully integrated with the general ledger, purchasing, and service request/work order system.
	Field Mobility: Manage work orders, establish calendars. Provide field personnel direct access to this functionality.
Utility Billing	Premises and Customer Accounts: Setup accounts, premises and owners, person responsible for the account. Add/change individuals, services, deposits.
	Meters: Inventory and track meters, order installations, track readings.
	Rate Structures: Ability to create and manage rate structures.
	Billing, Payments & Collections, Adjustments: Control billings, payment recognition, collection processing, adjustments, mailings, delinquency notices.
	Citizen Self-Service: Provide utility clients with web-based access to their utility account for real-time information, including: billings, payments, and consumption history. Also provide for credit card payments.
	Service Requests & Field Mobility: Manage service orders, establish calendars, cut-off-lists, assign on/off fees. Provide field personnel direct access to this functionality.

Electronic Document Management Systems

Electronic Document Management Systems (EDMS) provide an automated approach for controlling document-based information. These systems organize and manage collections of information in the form of electronic objects and provide access within workgroups and across the organization. EDMS is a combination of five components: Document Management, Imaging, Electronic Forms, Content Management and Workflow. These can be grouped into Imaging, Document Management and Content Management Applications.

Electronic document management (EDMS) software constitutes a set of services for organizing electronic documents; managing content; enabling secure access to documents and unstructured data; routing documents and automating related tasks; and facilitating document distribution. Core EDMS functionality includes library services (check-in/check-out, version control, and document-level security); cross-repository searching; common system administration; and unified system management.

Recent product introductions point to an increased leverage of Web technologies and standards (HTML, XML); the addition of Web publishing and enhanced information retrieval capabilities, and support for managing documents at a granular, component level. The EDMS market is in transition as core library services and repositories become commodities. The leading EDMS vendors— DOCUMENTUM, FileNET, and Laserfiche, and Microsoft Sharepoint — continue to morph their products into content management or knowledge management solutions.

Selection Guidelines

Application focus, implementation scale, and scope are general considerations in selecting EDMS software. In addition, the City should look for EDMS vendors that comply with industry standards and that have direct expertise in their business applications and specific industry or that have partnerships with system integrators who have that expertise.

Other decisions in selecting EDMS software include the following:

- The document management product's interfaces with the City's application infrastructure (e.g., ERP, Public Safety Systems)

- In a shift away from a workgroup focus, all EDMS software vendors want to position their products as enterprise-wide solutions. Toolkits that allow integrating many applications quickly are essential for enterprise-wide deployment, and templates, prototypes, models, and other aids can be useful for rapid implementation. Product technology must be flexible and scalable to satisfy enterprise-wide requirements. The capability to search repositories across servers, for example, is more important (and more difficult) than providing search services for a workgroup's single server. Search speed, or lack thereof, becomes an issue as the volume of documents increases dramatically across enterprise implementations. Distributed document databases may require such database features, as index replication and roll-back capabilities become more important in enterprise settings.

Geographic Information Systems (GIS)

Understanding basic application architecture, relationships between integrated municipal applications and the component interfaces required to support GIS solutions provides a foundation for understanding distributed GIS applications which would be implemented in the City. The GIS can serve as a primary integrating database which ties all of the operational departments as shown below.
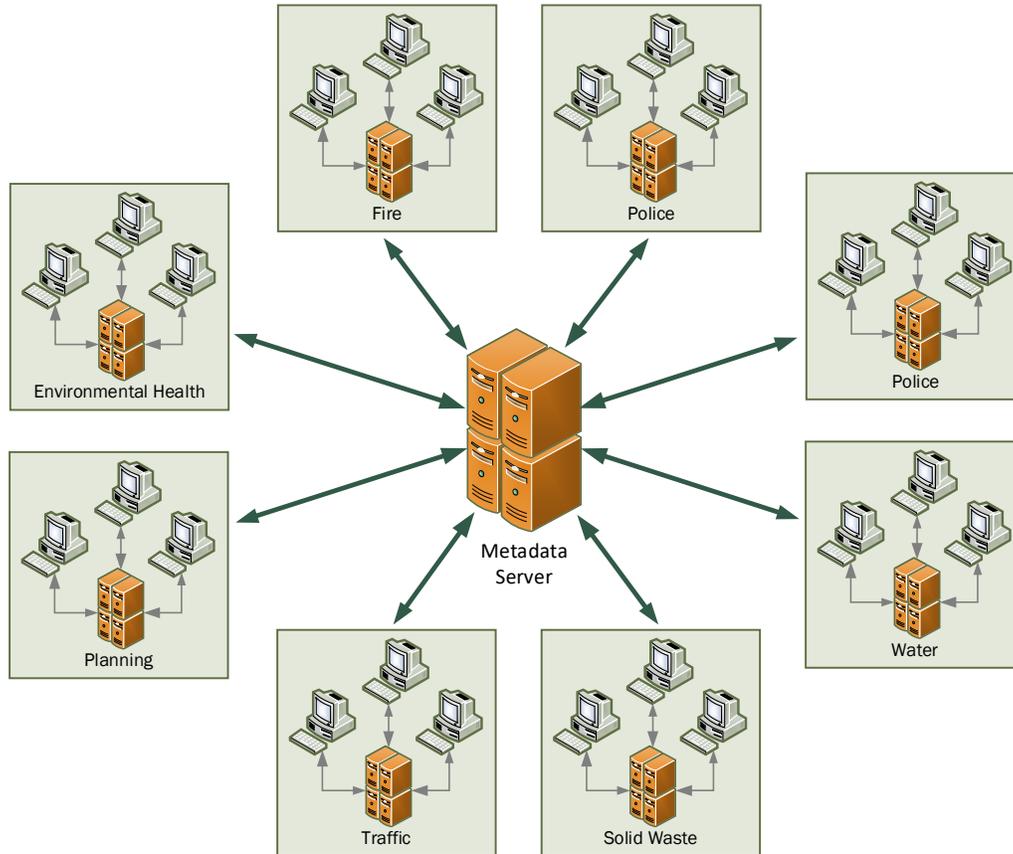
The Client Server GIS Architecture combines a variety of closely integrated applications to establish a fully supported system solution.
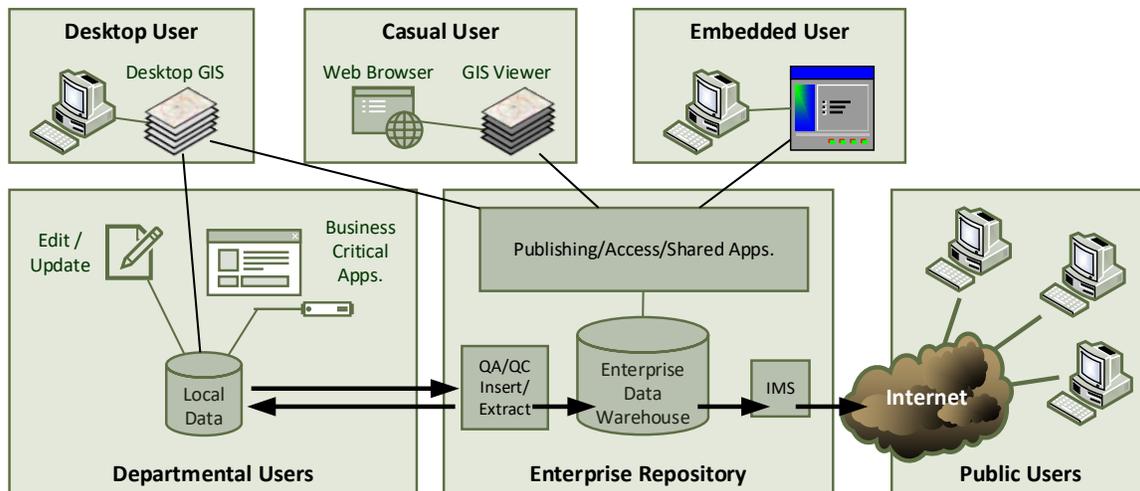
The Integrated GIS architecture can be configured in three tiers:

▪ Client Tier

- PC workstations that provide user access to the GIS System.

- The Workstation displays and controls application processes, which could be running X-emulation software, Windows terminals, or Web browser clients.

- Client functions include general spatial query and analysis studies, simple map production tools for general users and commercial map productions for professional users, general-purpose query and analysis operations, and spatial data maintenance.

- In single tier architectures the client application server and desktop user workstation may be the same platform

▪ Application Tier

- Application servers that handle application processing.

- GIS applications are supported within the distributed configuration by hardware platforms that execute the GIS functions. This tier supports access to the database tier and Web transaction servers that provide transaction-based map products to Intranet and Internet browser clients

- GIS applications can provide interfaces to custom business solutions that support specific business needs such as the permitting and inspections systems. End users do not require geographic expertise and use applications to support standard business functions

- The application server processes all spatial and attributes data requests received from the GIS client application. A transaction request is prepared by the GIS application client and sent to the server for processing. The server process completes the transaction query to the database server and returns the response back to the client for processing. There is no requirement in this configuration to map the database server disk to the GIS client.

- The server can also provide a communication interface between the City's applications and an Internet Web server.

- In a two-tier architecture, the application server and central data server may be on the same platform

- In a centralized solution application servers can be UNIX or Windows NT platforms that provide host-computing services to a number of GIS clients.

- Database Tier

  o Servers that house the supporting database.

  o The GIS System relational database is the central repository for storing all of the City's spatial and attribute data into a single standard commercial DBMS such as Oracle or MS SQL server.

  o Interacts with the application server for displaying, retrieving, and analyzing data, and generating maps and reports.