CITY COUNCIL
Staff Report

Meeting Date:	Jan. 21, 2020
To:	Mayor and City Council
From:	Scott Chadwick, City Manager
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Subject:	A strategic approach to citywide digital transformation

Recommended Action

Receive an informational report on a strategic approach to citywide digital transformation.

Executive Summary

The City of Carlsbad has adopted many digital solutions to shift manual or analog processes to digital applications. Digital solutions can improve efficiency, support robust internal controls, reduce errors and enhance customer service. The city's traditionally selected and adopted these solutions based upon the individual business need of individual departments, not the city. As the world progresses, becoming more online, mobile and interconnected, the need for cities to be strategic about implementing digital tools and services is more important than ever. This report presents a strategic approach to digital transformation that will provide more effective services to our residents, visitors, businesses and employees.

Discussion

Background

Over the past two decades, the City of Carlsbad has implemented many software solutions for its internal and external operations. For example, the city's financial system, payroll, and human resources functions are all managed using various software applications. The city has an application that replaced the previous land use permitting process, and the Parks & Recreation Department uses software that allows the public to register and pay for classes and events. Every department in the city has adopted some type of digital solution to handle what had been a manual process. As a result, city staff must currently maintain about 100 software applications for city operations.

As cities have adopted digital solutions and the public has become more reliant on digital technology, there's no question that the future of all cities is in providing an effective platform for engaging with city services. Approaching the subject of digital services incrementally rather than strategically leads to inefficiency, redundant systems, problems with integrating

technologies and potential waste. City staff have developed a more strategic approach to digital transformation rooted in best industry practices and the city's current and future needs.

This strategic approach considers the city's digital operations and services from a citywide perspective, or what is commonly known in information technology as enterprise wide, using enterprise resource planning. In enterprise resource planning, an organization develops a suite of integrated software applications to manage its operations. An enterprise resource plan can automate many back-office functions related to technology, human resources and other areas of city business. It also allows data to be shared by applications, making information about city services easier to track and analyze.

The city has adopted individual software applications that could be pieces of an overall enterprise resource plan, but it has not defined a unifying approach to integrate all these solutions for greater effectiveness and efficiency.

For example, the city uses distinct software solutions to manage its financial operations, personnel and payroll. The selection, installation and updating of these applications has been an incremental, disjointed and siloed process, and some of the city's existing software has not been upgraded in a very long time.

The public is inconvenienced by this piecemeal approach to software deployment. For example, Carlsbad residents must have separate accounts, each with their own user names and passwords, to:
- Check out books or access online reference material from the library
- Pay their utility bills
- Sign up for recreation classes or programs
- Apply for a permit or business license
- Submit a public records request
- Submit a request for city services
- Apply to be a city volunteer

Meanwhile, city staff are also dependent on outdated, manual processes, and must enter data by hand into a wide range of applications that do not share data with one another.

By adopting a more strategic approach to our digital systems, the city has the opportunity to operate more efficiently, reduce the likelihood of loss of service and better provide for the current and future needs of our residents, visitors, businesses and employees.

In fiscal year 2014-15 the city allocated $500,000 to assess the opportunities for an enterprise resource planning approach to the city's operations. A contract with Plante Moran, a consulting company that advises governments on digital transformations, was approved by the City Council on February 10, 2015, and the consultant provided an Enterprise Resource Planning Needs Assessment report to the city on May 9, 2016.

Plante Moran reviewed the city's existing businesses processes, offered high-level future process recommendations, provided key performance indicators from comparable cities and estimated the return on investment the city would realize by shifting to an enterprise approach.

The consultant found the City of Carlsbad had:
- Decentralized business operations
- Limited access to its data and information
- An over-reliance on manual processes
- Incomplete system implementations
- Limited documentation and training on digital tools and processes
- Inconsistent enforcement of policies and procedures

While there have been improvements in many of these areas, the city still faces significant challenges in its enterprise resource planning.

One of the report's key recommendations was to replace redundant and isolated digital applications with an integrated, citywide enterprise resource planning solution that streamlines businesses processes and provides more timely access to data and information.

Strategy based solution

New strategy
Based upon a review of our existing systems and the analysis by the outside consultant, the Department of Information Technology has developed a strategic approach to digital transformation that takes an enterprise, or citywide, approach to the digital applications the city uses or intends to adopt.

Attached to this item is the Application Portfolio Strategic Plan, which provides a plan for executing this approach. This plan includes these important goals:
- Modernize and strengthen the city's portfolio of digital applications
- Provide integrated, more efficient, city services to residents, visitors and businesses
- Build the capability for data-driven government
- Foster a culture of vibrant civic engagement
- Enhance accessibility and transparency

Achieving these goals requires a unified suite of digital applications that are interconnected, that share data, that increase staff efficiency and make doing business with the city simpler and more convenient for residents, businesses and visitors.

A good example of how digital solutions can effectively replace manual processes is the city's Public Record Act request and council inquiry portal. Using a software application from a company called GovQA, the city is able to provide a simple online portal for people to request a public record. This portal significantly reduced the amount of time it takes members of the public to access records and staff to answer questions. Instead of adopting another application to handle city council inquiries from the public, the city expanded its use of GovQA in 2019 to

also handle that workload. To date, 62 requests have been routed and resolved using this platform.

To provide the City Council with the best options for pursuing digital transformation, city staff released a Request for Digital Transformation Ideas and Partners. This document asked digital solution providers to detail why they would be qualified to help the city achieve its enterprise resource planning goals. This was done using challenge-based procurement, a method that asks potential vendors to propose their solutions to a given challenge, rather than being given a specific set of requirements to fulfill.

Staff will review the qualifications of the potential partners who respond, then select the partner or partners who could best help them assess the city's challenges and opportunities and craft the most effective solutions. This innovative partnership will enable city staff to make more informed recommendations to the City Council on the best approach to upgrading the city's digital applications and systems.

Fiscal Analysis
This is an informational item with no fiscal impact.

Next Steps
Staff will evaluate the qualifications of potential partners and select the company or companies that can best help the city achieve its enterprise resource planning goals.

Staff will then make recommendations to the City Council consistent with this more strategic approach to our existing and future systems and software needs during the budgeting process for fiscal year 2020-21.

Environmental Evaluation (CEQA)
Pursuant to Public Resources Code Section 21065, this action does not constitute a "project" within the meaning of CEQA in that it has no potential to cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and therefore does not require environmental review.

Public Notification
This item was noticed in accordance with the Ralph M. Brown Act and was available for public viewing and review at least 72 hours prior to the scheduled meeting date.

Exhibits
1. City of Carlsbad Application Portfolio Strategic Plan

Exhibit 1

City of Carlsbad

APPLICATION PORTFOLIO STRATEGIC PLAN

PURPOSE

This document establishes a high-level strategic plan that provides an enterprise focused framework that will enable the City of Carlsbad to fundamentally transform its portfolio of digital applications. This transformation will enable the city to:

- Modernize and strengthen its technology application infrastructure
- Provide more efficient, integrated city services to residents, visitors and businesses
- Build the capability for data-driven government
- Foster a culture of vibrant civic engagement
- Enhance accessibility and transparency

The applications in the portfolio are fundamental to the city's ability to carry out its core business functions. Implementing applications requires a significant investment of city resources in cost and staffing. As the city looks to upgrade existing applications or implement new applications, it is imperative that these initiatives are evaluated to ensure they align with the city's strategic vision and its goal of being a digital city leader.

GUIDING PRINCIPLES

In consideration of the strategic importance of the city's critical core applications, the following guiding principles have been identified.

Applications in the city's application portfolio must have the following attributes:

- ❖ Reliable - The application must operate with minimal disruption. This includes being implemented in a manner that provides redundancy and disaster recovery
- ❖ Secure - In today's high cyber threat environment the application must adhere to industry security best practices and provide as few entry points to potential intruders as possible
- ❖ Scalable - The application must be able to grow to meet future demands of the city as well as adjust to new technology and business processes.
- ❖ Integrated - The application must follow industry standards and best practices to ensure that it will seamlessly integrate into the application portfolio.
- ❖ Data Capability and Management - The application must provide the ability for data analytics and business intelligence as well as data openness and transparency. The application must also adhere to the city's data governance policies.
- ❖ Value - The application must provide an identifiable benefit to the city and its residents commensurate with the cost to implement and maintain it.

OUR CURRENT STATE

The city's application portfolio currently consists of over one hundred individual applications. Many of these applications provide redundant functionality, are based on legacy and outdated technology and cannot be integrated with other city applications. As a result, many manual and time-consuming processes have been implemented to move data between applications, a great deal of effort must be expended to keep keeping applications running and stable and the city's data environment is significantly fragmented and siloed.

This chart shows the various applications used by city departments.
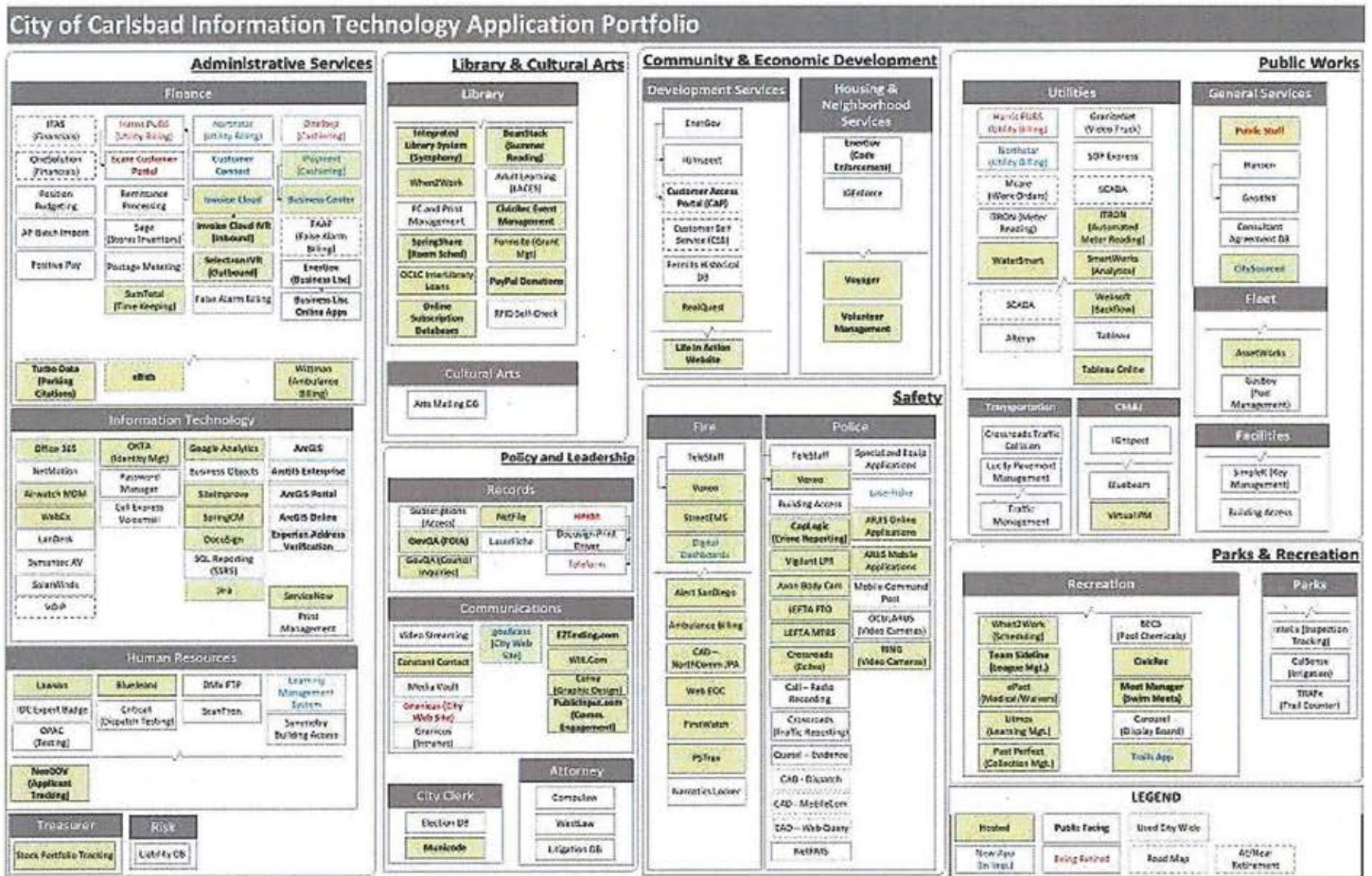

Figure 1 - Existing application portfolio

Additionally, many of these applications have public-facing interfaces, each one requiring a separate account, user name and password. For example, as a resident of Carlsbad, you need separate accounts to:

- Check out books and access online reference material with the library
- Pay your utility bill
- Sign up for a recreation class or program

- Apply for a permit or business license
- Submit a public records request
- Submit a service request (i.e. report a pot hole)
- Apply to be a city volunteer

Historically, applications have been implemented in isolation, not by using a citywide or enterprise approach. A department identified a technology solution to what had been a manual or analog process, then worked through the budget process to acquire funding to implement that new system. While some analysis was conducted to ensure the system fit into the city's overall technology standards, minimal consideration was given to using the city's existing technology to meet the challenge. In some instances, departments acquired applications without any coordination with the Information Technology department. As a result of these practices:

- The city has redundant applications performing similar functions, such as multiple work order systems
- Data is siloed in department-specific applications, preventing staff from being able to analyze data across the entire organization
- The city's application portfolio difficult to maintain and keep current

The acquisition of new applications has followed the traditional request for proposal process. This involves developing a detailed list of requirements, releasing a request for proposal, evaluating responses, conducting vendor demonstrations, selecting a solution and negotiating contracts. This process is time-intensive, takes several months to complete and has frequently led to the implementation of solutions that did not fully deliver on expectations.

Outside consultants have completed multiple assessments of city technology, in 2012, 2013, 2016 and 2017. These assessments consistently identified the following problems with the current application portfolio.:

- Decentralized business operations
- Limited access to data and information
- Duplicate systems and a lack of system integration
- Reliance on manual processes
- Incomplete system implementations
- Limited training
- Limited documentation
- Inconsistent enforcement of policies and procedures

City staff encounter the downstream impact of these challenges on daily basis. Some examples:

- Time tracking/scheduling
  - Employees in various divisions of Public Works are required to complete redundant timekeeping processes. To report exceptions to their normal shift schedule such as vacation or sick leave, they must log in to the city's centralized time and attendance system. For tracking work completed daily, they must log in and enter the data in the Public Works work order management system.

- o Part time staff in the Library or Parks & Recreation departments must access a separate scheduling application to view their weekly schedules but then must clock in or out using the city's centralized time and attendance system.
  - o Schedules and time tracking for the fire and police departments are maintained in a safety scheduling system even though leave accruals and payroll processing must be tracked in the city's centralized time and attendance system.
- Manual processes
  - o Staff attending training or conferences that require travel, are required to fill out a travel log in an Excel spreadsheet. This spreadsheet must then be printed and physically routed with hard copy receipts for approval. Once approved, city staff must manually enter data into the city's financial system so payment can be processed. The process means it can take multiple weeks for an employee to be reimbursed for out of pockets expenses for city related travel.

These challenges do not just impact internal city staff. External customers doing business with city are also affected by the city's outdated applications and business processes. For example, a contractor needing to complete work within the city must:

- Apply for a business license
  To accomplish this, an application is completed online using a city-developed web application. Once that application is completed and validated, city staff manually enter the data into the city's business license application. Once entered into the system an invoice is generated and made available to be paid online, which requires establishment of an account, or in person at the city cashier. This process typically takes several weeks.
- Apply for a permit
  Applying for a permit typically requires an appointment that must be scheduled over the phone. During the appointment, one or more physical forms are completed. Once the forms are completed and validated, city staff manually enter the data into the city's permitting system. Any fees associated with processing the permit must be paid in person at the city cashier. Additionally, three-to-four sets of physical plans and drawings must also be submitted. These plans are then manually routed through multiple departments and divisions for review. During the review process, applicants have no visibility into where in the process their application is. Any status inquiries must be done via e-mail or a phone call.
- Request inspections
  Once a project is approved and a permit is issued, several city inspections must be completed at various phases of construction. When ready for an inspection, the applicant must call, e-mail or submit an on-line request form prior to 3 p.m. the day before the desired inspection date. City staff than retrieve these inspection requests and manually enter them into the city's permitting system.

In 2013, the city embarked on its first true enterprise approach with the implementation of a new Integrated Community Development System. This system combined four separate core business functions, permitting, business license management, code enforcement and land management, into one centralized application. While this project was successful in consolidating applications, the system was configured to match existing business processes instead of reassessing and modifying existing business processes to best match the functionality of the new system. This approach fell short and, in some cases, increased complexity and decreased productivity. In other instances, departments or

divisions felt the system was inadequate in addressing their business processes. This led to limited engagement on the part of these work groups during the planning and configuration process and, after the implementation, a tendency to continue with legacy and manual processes.

In December 2019, the City Council approved the implementation of an upgraded digital information network. This upgraded city-managed digital information network will improve connection reliability at greater network speeds, give the city flexibility to adapt to greater technology demands and reduce the city's network operational costs by $2 million over the next five years. One of the fundamental components needed to ensure the city fully realizes the benefits of this new and improved network is a modern application portfolio.

GOALS

The City of Carlsbad aims to be a digital city leader by being more resilient, responsive and future ready. This requires that the city has an application portfolio that leverages current technology, follows industry best practices and is implemented within an enterprise strategic framework. To accomplish this, the following goals have been identified:

1. Centralize and consolidate core business functionality
2. Break down silos
3. Improve business processes
4. Enhance the user experience for city staff, residents, visitors and businesses with an emphasis on mobility, accessibility and transparency
5. Establish and adhere to governance
6. Take advantage of challenge-based procurement practices
7. Focus on change management

CENTRALIZE AND CONSOLIDATE CORE BUSINESS FUNCTIONALITY

The city's current application portfolio does not meet the city's operational requirements, does not meet user needs, does not follow industry best practices, lacks integration and is inhibiting the city's ability to make data driven decisions and provide accessibility and transparency.

A centralized solution that consolidates the city's core business functions will enable streamlined business processes and provide more timely access to data and information. Implementing a new centralized solution will provide the city with the following benefits:

- Leveraging technology to realize true business process improvement including:
  - One common integrated database
  - Workflow automation within and between modules
  - Built in best-practices
- Providing more robust management reporting.
  - Having data from multiple business functions in one centralized application enables wholistic reporting
- Reducing software fragmentation

- With one centralized solution, only need to complete periodic upgrades once versus multiple times for each individual/siloed application

At a minimum, the following core business functionality will be evaluated for inclusion into a centralized solution:

Finance:

- General ledger and bank reconciliation
- Budgeting
- Grant and project accounting
- Purchasing
- Bid and contract management
- Account payable and receivable
- Centralized cashiering
- Financial reporting

Human Resources:

- Application tracking
- Onboarding and offboarding
- Risk management
- Benefits management
- Employee self-service
- Time and attendance
- Payroll

Utility billing

- Customer and account management
- Billing
- Service and work orders
- Meter reading and management
- Customer self service

Land management

- Planning
- Permitting
  - Building
  - Engineering
  - Special events
- Inspections
- Code enforcement

- Business license
- Address and parcel management
- Customer self service
- Bond management

Work orders and asset management

- Administration
- Transportation
- Environmental management
- Parks
- General services

Police

- Computer Aided Dispatch (CAD)

Existing applications that could potentially be included in a centralized/consolidated solution are highlighted in figure 2 below.
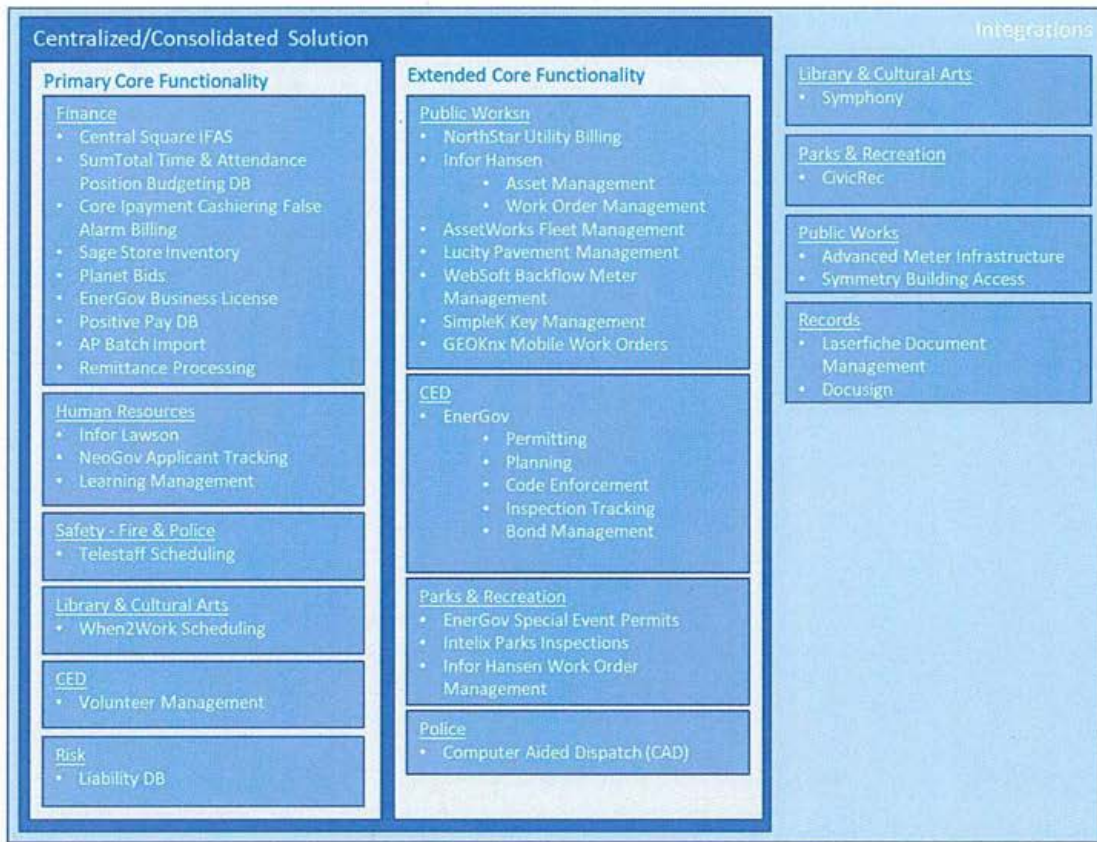

Figure 2 – Applications to be considered for incorporation into a centralized solution

BREAK DOWN SILOS

There is significant opportunity to leverage the power of data analytics to tell the story of the work the city does and to identify opportunities to increase effectiveness through data driven decision making. However, the city's ability to realize this potential is dependent upon breaking down the data silos that currently exist.

As applications are reviewed for implementation or upgrade, they will be measured against the following criteria:

- Is the desired/required functionality of the proposed application already available within an existing enterprise application?
- Can the application be seamlessly integrated into the application portfolio so that is a fully functional component of the of the portfolio and not a stand-alone silo?
- Is the data collected by the application stored in a relational database management system that allows for extraction and migration into a citywide business intelligence environment?

IMPROVE BUSINESS PROCESSES

In the past, it has been common practice for the city to implement new applications by configuring them to match existing business processes. This has frequently resulted in applications that have been configured with work-arounds, the development of shadow systems or processes and implementations that do not take full advantage of all the functionality available within the applications. The city has also missed opportunities to streamline processes and improve efficiency.

Future application upgrades and implementations will be completed with an emphasis on how the city can perform its tasks more effectively. This includes:

- Validating and documenting existing processes
- Identifying how these processes can be streamlined
    - Eliminating manual and or redundant processes
    - Removing unnecessary or self-imposed barriers
    - Where possible, modifying city policies or ordinances that are outdated or over-complicate processes
- Aligning processes with application functionality

The intent of this goal is not only to transform the city's application portfolio, but to transform the way the city conducts business.

ENHANCE THE USER EXPERIENCE

As the city works to transform its application portfolio, the user experience for both internal and external users will be a cornerstone of any new implementation or upgrade. An emphasis will be placed on mobility, accessibility and transparency.

MOBILITY

The landscape of city work is changing. Being tethered to a desk is no longer a constraint to how work is completed. Staff who work in the field are becoming increasingly dependent on using technology and for remote access to city data to efficiently to complete their work. To facilitate the evolution of a mobile work force, future city implementations must:

- Where applicable, provide secure but easy-to-use mobile field functionality
  - Must be available without requiring proprietary hardware
  - Should be device agnostic
- Work with the city's existing remote access solution
- Be compatible with the standard configuration of the city's current laptop offerings

Having an application portfolio that is responsive to the mobile demands of how the city conducts its business will also open the opportunity for the city to explore flexible work alternatives.

The focus on mobility also extends to the city's residents and customers. According to the Pew Research Center, almost 50 percent of American adults own a tablet computer and over 80 percent of Americans own a smart phone. To provide a high level of customer self-service and to foster an environment of civic engagement, city public facing applications need to be mobile friendly.

ACCESSIBILITY

New applications with an internal staff interface should:

- Be web browser based and browser agnostic
- Not rely on browser plug-ins such as Adobe flash or Silverlight
- Be security assertion markup language (SAML) compatible for single sign on (SSO)

Additionally, for applications with resident and customer facing functionality:

- Should be browser-based and browser agnostic
- Consider those with special accessibility needs
- Be intuitive, easy to understand and use

Another significant area of focus for public accessibility will be unifying account identities. A resident should only need to have one set of credentials to conduct business with the city.

TRANSPARENCY

The city is striving to further an environment of openness and transparency by establishing an open data portal, creating public facing dashboards and expanding the use of digital tools to enhance public access to information. The business processes used by the city and the applications that support them need to enable and not hinder these efforts.

ESTABLISH AND ADHERE TO GOVERNANCE

Transforming the city's application portfolio will be an ongoing and continuous process. To ensure that this transformation is completed in accordance with the city's strategic vision and that technology is implemented in a consistent and supportable manner, certain governing bodies and policies need to be established.

STRATEGIC GOVERNANCE

To ensure that the investment of city budget and staff resources on application implementations is consistent with the city's strategic vision, a formal executive governance committee will be established. This committee will be charged with evaluating proposed applications to:

- Validate that the application aligns with city and IT strategic plans, architecture and technology standards, including legislative and regulatory mandates and administrative goals such as improving customer service and business processes
- Coordinate IT investments across the enterprise to avoid duplication, maximizing the return on investment and increasing efficiency
- Ensure that the business case has been articulated and that there are valid operational benefits to the application
- Validate that the cost and benefit estimates are reasonable and accurate
- Ensure that the application project sponsors have considered potential project risks and have identified appropriate means to manage those risks
- Verify that standard project management practices are employed
- Determine if a project could be used as a pilot or proof of concept for future projects

APPLICATION GOVERNANCE

As enterprise solutions are implemented, the boundaries of department ownership become less defined. Also, since enterprise solutions by their very nature are used by multiple departments and divisions, any change to configuration or functionality has the potential for negative downstream impact. To ensure the integrity and stability of the city's enterprise applications, each application will have its own governance consisting of a governance committee and a change control committee.

Application governance committee

At the conclusion of an application implementation project, the steering committee for that project will transition into the application's governance committee. The role of the governance committee will be to:

- Support the adoption of new functionality within the application
- As needed, provide direction and guidance
- Approve significant application changes such as major upgrades
- Identify and commit necessary resources

The governance committee will consist of department directors or division managers that represent the key stakeholders of the application.

Application change control committee

The application change control committee will be comprised of the technical and subject matter experts from each of the primary departments utilizing the application. This committee will evaluate changes requested by a division/department for technical feasibility and potential impact. Before implementing a change, the members of the change control committee need to agree on the proposed change. If the members of the change control committee are unable to reach a consensus, the matter will be referred to the application's governance committee.

These committees also provide an opportunity for collaboration, coordination and cross functional training between the departments and divisions using the application.

The city's strategic vision of implementing a centralized and consolidated solution will reduce the number enterprise applications in the city's application portfolio, which will subsequently limit the number of governance and change control committees.

DATA GOVERNANCE

Data is a city asset. As such, it should be maintained with the same care and attention as any of the city's physical infrastructure. Ensuring the city's data is consistent and trustworthy is a fundamental requirement for building capacity for data driven government and for enhancing accessibility and transparency. As stewards of the public's data, it is incumbent upon every team member to learn, understand and put into practice the city's data governance policies. The city recently hired a new data scientist who will be conducting a data inventory, creating a city-wide data governance and management policy and establishing an open data policy. Any future application implementations or upgrades will be required to comply with these polices and guidelines.

LEVERAGE CHALLENGE-BASED PROCUREMENT

The traditional request for request for proposal process involves:

- Developing an extensive list of requirements
- Drafting a comprehensive request for proposal
- Evaluating responses
- Rating vendor demonstrations
- Completing vendor selection
- Negotiating a contract negotiation

This process is extremely time and labor intensive and significantly prolongs the implementation on new technology solutions. This process is also costly to software solution providers and vendors are being more selective in the RFP's they respond to.

Where feasible, the city will use a challenge-based procurement process. This process focuses on desired outcomes to address particular challenges, instead of identifying a particular solution. This process provides:

- Greater diversity and quality of solutions and bidders
- Faster process from challenge issuance to implementation
- Pilot allows city to test drive solution prior to purchase
- Increases opportunity for collaboration between city and solution providers

Issue Challenge
- Describe Problem
- Outline High Level Requirements

Evaluate Responses

Demo/Prototype
- 3-4 Month Pilot Implementation
- Identify High Level Requirements

Award Contract

figure 3 – Challenge based procurement process

FOCUS ON CHANGE MANAGEMENT

Transforming the city's application portfolio will bring a great deal of change to the organization. Not only in the tools and software that staff uses, but also to the processes that staff follow to complete their day to day work. To prepare the organization for change and to ensure that application implementations are completed successfully and with a high rate of adoption, significant effort needs to be dedicated towards change management.

Change management within the city will be based on the following high-level process:

1. Identify the scope, breadth and magnitude of the change, the audience that will be impacted by the change and potential barriers to change adoption.
2. Prepare a comprehensive plan that addresses the identified user audiences as well as strategies to eliminate or mitigate barriers.
3. Design communications, training, training materials, user guides, how to videos, frequently asked questions (FAQ's) and other materials that prepare and educate the impacted audiences.
4. Execute the plan as it has been agreed to by the project sponsor and project steering committee. The plan is executed in conjunction with implementation of the project.
5. Sustain the plan and the change management process through every stage of the project.
6. Monitor the effectiveness of the of change as well as the level of change adoption.

Figure 4 – Change Management Process

Change management must incorporate not only city staff, but where applicable, external users (city residents and customers).

Each major application upgrade or implementation project will incorporate change management principals. Budgets for these projects should also include funding for change management consulting services. Additionally, to ensure that city staff have the time necessary to successfully complete the training, testing and project management assignments associated with large application implementations or upgrades, project sponsors should evaluate the potential need for setting aside budget for staff back-fill.