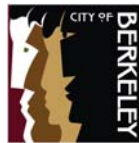
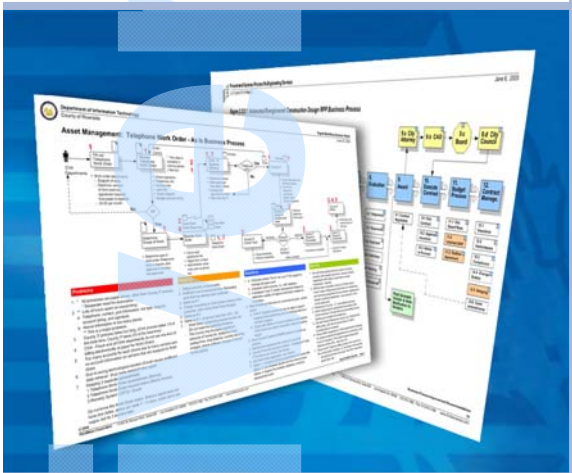


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Digital Strategic Plan & Roadmap

Volume 1: Findings & Recommendations

October 17, 2016

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Preface

Digital Strategic Plan: Findings & Recommendations

Preface

The City of Berkeley (City) Digital Strategic Plan & Roadmap (DSP Roadmap) is the result of a comprehensive and thorough assessment of the City’s existing technologies, operational requirements and service delivery needs. This document reflects a business and technology strategy that is technologically strategic, operationally responsive, and fiscally responsible. It addresses the unique requirements of the mission critical business needs of the City and its constituents, visitors and business community as a whole.



The DSP Roadmap is the product of a collaborative effort with City management and staff who made valuable contributions throughout the project. A considerable focus was placed on addressing management, operational and technology challenges identified during the project; which are referred to as “Problem Statements” throughout this document. However, this report should not leave the impression that all ThirdWave assessed was problematic. Nothing could be further from the truth. ThirdWave observed numerous strengths at the City including the following:

- The City has made significant investments in departmental and enterprise systems in the last several years. Most recently, the City implemented an OnBase Enterprise Document Management System and is currently going through the process to procure an Enterprise Resource Planning System, which will address a number of city-wide technology and business process needs.



- The City has a number of new members on its leadership team, which has infused the City with a fresh set of progressive perspectives. Many City department heads are exceedingly capable and share a common vision to enhance the City’s Information Technologies.
- City staff have a strong level of professionalism, with a conscientious commitment to delivering exemplary services to the residents, businesses and visitors that visit the City of Berkeley.
- The City is the recent recipient of a Rockefeller Foundation grant, which aligns most to goal #5 of the City’s Cyber and Infrastructure Resilience Strategy, related to improving major City Information Technology systems.
- The City’s relatively new IT Director has brought a new level of energy and rigor to reshaping the IT organization, and the City’s Information technologies, into a highly responsive and innovative resource to City Departments and the Berkeley community.

The DSP Roadmap focuses on improving the status quo and articulating a path for becoming an exceptional city, and is comprised of two complementary volumes:

Volume 1: DSP Roadmap Finding & Recommendations, identifying a comprehensive set of possible management, business process improvement, and Information Technology initiatives (this document); and,

Volume 2: DSP 5 Year Implementation Roadmap, providing the final proposed and prioritized initiatives, budget estimate, 5-year timeline, and Cost Allocation Plan for implementing the Roadmap (a separate document).

The challenge of adopting, funding and implementing a DSP Roadmap is a formidable one. However, given its 5-year timeline, there is plenty of latitude to execute the technology initiatives identified in the DSP. The DSP Roadmap is a living document that can be (and should be) reviewed and adjusted on a yearly basis. It provides an opportunity for new, more efficient ways of providing services - coupled with strategic investments in technology.

The cornerstone of the DSP Roadmap is to ensure that investments in strategic business technologies are sound and deliver the highest possible value to the City and its constituents. Additionally, the DSP Roadmap aligns with, and supports, the City of Berkeley’s Strategic Plan. Moreover, this document provides a wealth of data that can be leveraged over the next five years to facilitate excellence in municipal services, civic participation, and community wellbeing.

We’d like to extend our appreciation to the City Council for supporting this important initiative, the City Manager, Department heads and staff at the City of Berkeley for their engagement and valuable input.

Roy R. Hernández
Founder, President & CEO



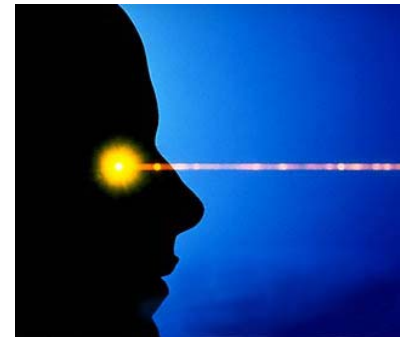
Executive Summary

Findings & Recommendations

E.1 Digital Strategic Plan Vision

This document reflects a Digital Strategic Plan Roadmap (DSP Roadmap) custom tailored to the City of Berkeley. It is technologically sound with a focus on Strategic Business Technologies in response to the business and service delivery needs of the City of Berkeley and its community. The vision of the DSP Roadmap is to:

Provide a comprehensive roadmap fostering the use of proven state-of-the-practice Information Technologies in the most strategic, innovative, cost effective and efficient ways possible to support internal City operations, extraordinary customer service delivery, civic participation and community wellbeing.



The adoption and implementation of the DSP Roadmap will leverage the effective investment in Information Technologies while at the same time supporting the City of Berkeley's Strategic Plan and Resilience Strategy



E.2 Project Goal & Objectives

The goal of the DSP Roadmap and Cost Allocation Plan project is to create a five (5) year Digital Strategic Plan (DSP) employing a highly participatory process directly engaging City departments, staff, management, and the IT department.



The objectives are to:

- Connect technology resources, innovation, and initiatives to the City’s Strategic Planning Goals.
- Serve as the framework for how IT services are delivered throughout the City and ensure business technologies are sound and deliver the highest possible value to the City and its constituents
- Define a clear set of goals, guiding principles, and strategic priorities for accomplishing the City’s objectives of Digital strategy, principles and implementation roadmap.

The DSP Roadmap contains measurable objectives and will be the guiding document that shapes how the City delivers innovative and effective technology services throughout the organization and to the Berkeley community.

E.3 Project Approach & Methodology

The City of Berkeley DSP Roadmap project employed a comprehensive and structured “waterfall” best practice methodology. The project collected and synthesized various types of information, including:

- Data on existing and planned Information Systems;
- Focus Groups with IT staff and management;
- Management Interviews with the City’s leadership team;
- Online Staff Survey, to allow all City staff and management the opportunity to provide input into the project; and,
- Twenty-six (26) Rapid Workflow® business process analysis workshops addressing mission critical business functions for all City Departments.

E.4 Digital Strategic Plan (DSP) Findings

E 4.1 Organizational Context

The City of Berkeley is a Charter City with a Council-Manager form of government. The Department of Information Technology (DoIT) provides services such as technology planning, technology procurement, network infrastructure/support services, helpdesk, data, telephone, GIS, application deployment and support, project management, database, security, administration, and a 311 Customer Service Center hotline available to over 1,400 employees including public safety, health services, as well as the general Berkeley community. DoIT is



staffed by 40.5 City employees. DoIT also provides Active Directory, Exchange, and telephone services to the Berkeley Public Library. The primary service facility is the Civic Center, in addition to approximately 42 remote sites. The previous Information Technology Master Plan was developed in-house in 2009.

E 4.2 Summary of Findings

The following provides a summary of key findings of the DSP Roadmap project: (Technical terms are defined in a glossary in Section 4 of this document.) The DSP Roadmap project identified hundreds of specific challenges; the items below list the top eight challenges facing the City of Berkeley.

- 1. The existing IT funding model, which is predicated by some positions funded by various City departments, is not working well.**
The current funding policy creates challenges for both department and the IT organization. Some departments feel as their needs are not sufficiently addressed, and resource allocation is problematic for the IT Director. The current mode is unsustainable.
- 2. The City lacks a contemporary networking/communications infrastructure.**
The City's City-owned Fiber between downtown buildings was placed in 2000 and needs replacing and the City lacks reliable city-wide Wi-Fi capabilities.
- 3. The City IT has an acute lack of Project Management expertise.**
Poor project planning and a low percentage of projects delivered on schedule and/or budget is common. This has delayed the roll out of critical systems, in some cases, for years.
- 4. The City has a number of aging enterprise applications, which need upgrading or replacing.**
The City is in the process of procuring a new Enterprise Resource Planning system, which will provide significant functionality to a number of mission critical processes. However, there is still a significant need for enterprise systems across several City departments.
- 5. The City lacks numerous departmental application software.**
City staff identified a number of needed departmental applications to provide Berkeley residents the services they require. (Some of these applications were identified in the IT Master Plan developed by the City in 2009.)
- 6. The City IT organization lacks the expertise and capacity to support the implementation of current and new DSP Roadmap initiatives.**
The existing IT organization and operational model is not positioned to support existing projects, as well as those identified in the DSP; it lacks key knowledge, skills and abilities not required 10 or 20 years ago when many of the existing systems were deployed. There is strong need to invest in Technology training for IT and City staff.
- 7. The City does not have IT Governance policy or process.**
The current IT Director has invested a considerable amount of effort to rationalize and control the City's project portfolio, but prior to her tenure the absence of a formal IT Governance structure had led to more than 100 projects in various degrees of progress, with/without funding, or unrealistic project schedules. This has adversely impacted the



ability to deliver badly needed technologies to City departments and has affected the IT organization's credibility.

8. The City's website design is dated, reflecting city websites from 2000 to 2005.

The City's website is dated and its maturity level is not comparable to other leading cities. The website navigation is inconsistent, the layout visually cluttered, and the Graphical User Interface is unfriendly. Moreover, and perhaps most significant, the City's website is not focused on online service delivery.

The existing IT business model, inherited by the recently hired IT Director, has resulted in a variety of systems and end user support challenges; and as noted by some staff and management, it is unsustainable. Given the tactical and strategic role Information Technology plays in effective and efficient municipal service delivery, the status quo acts as a barrier to making the best, most effective use of technology and limited City human resources.

E 4.3 Summary Recommendations

The DSP Roadmap project identified hundreds of specific actionable recommendations. The items below provide a summary of the top eight organizational and technical recommendations for the DSP Roadmap.

1. Adopt a redefined IT Cost/Budget Allocation Model:

The optimization of City human and financial resources requires a redefinition of the existing IT cost/budget allocation model. New policies should include the following:

- Adopt a cost allocation plan for IT staff and infrastructure costs.
- Establish an Internal Service Fund to support existing and new infrastructure.
- Implement an IT Service Management tool for help desk service request tracking, software and hardware asset management.
- Communicate the plan to end users.

2. Update the City Fiber Network and implement City-wide Wi-Fi:

- Carry out a Fiber Infrastructure and Wi-Fi Master Planning efforts.
- Upgrade the City-owned fiber infrastructure.
- Explore public/private partnerships for the implementation of public Wi-Fi and Fiber.

3. Adopt rigorous IT Project Management best practices for City IT efforts:

Provide formal and rigorous Project Management best practice training to IT staff to ensure successful project delivery and effective support of City departments:

- Adopt the Project Management Institute's PMBOK™ (Project Management Body of Knowledge) project management methodology.
- Implement project management software to support all Project Managers.
- Resource sufficient Project Managers in DoIT to support the current and projected IT project portfolio over the next 5 years; create a Project Manager class specification if required to meet this need.

4. Replace aging enterprise applications:

Build on the current Enterprise Resource Planning (ERP) procurement with the evaluation and replacement of applications not in the initial ERP implementation phase: Focus on:



- Applications highly tailored and responsive to the specific business, functional and technical requirements identified in the Rapid Workflow® workshops. Example applications include: Enterprise Document/Records Management, Workflow Automation/E-Forms/E-Signatures, Worker's Comp, Asset Management, Contract Management, Customer Relationship Management, and Office 365.
 - Enterprise Architecture, Interoperability, Service Oriented Architecture and Web-enabled capabilities to foster application integration.
 - Cloud-based applications, with proper vetting that hosted applications can be integrated with related systems.
- 5. Implement state-of-the-practice departmental applications:**
Evaluate, prioritize, and replace departmental applications identified in this document, focusing on:
- Applications highly tailored and responsive to the specific business, functional and technical requirements of City departments as identified in the Rapid Workflow® workshops. Applications include: Commissioner Tracking, Permit Summary, CAFR, Real Quest Enhancement, Refuse Billing Application, Route Code Enforcement, Grant Time Tracking, Learning Management, Dog Licenses, Telestaff Upgrade/Replacement, Public Records Act Request, Irrigation Management, and Case Management.
 - Enterprise Architecture, Interoperability, Service Oriented Architecture and Web-enabled capabilities to foster application integration.
 - Cloud-based applications, with proper vetting that hosted applications can be integrated with related City applications, where applicable.
- 6. Align the IT Organization's skillsets and capacity to effectively support the City:**
Reconfigure the IT organization with the knowledge, skills and abilities to deliver exemplary IT services and support including:
- Place a new and refocused commitment to providing technical expertise, extraordinary customer service, and a high caliber of project management:
 - Augment the IT organization's knowledge gaps with the following: Information Security Officer, Digital Communications Specialist, Database Administrator, GIS Applications Specialist, Project Managers, and Information Systems Specialist.
- 7. Adopt IT Governance best practice:**
Implement an IT Governance structure, process, policies and practices to ensure the appropriate selection and implementation of IT solutions enabling the City to achieve its goals and objectives. IT governance should:
- Determine business, functional and technical requirements in response to City needs and aligned with the City's Enterprise Architecture
 - Ensure effective evaluation, selection, prioritization, and funding of IT investments
 - Allow IT (or its IT partners) to manage successful DSP implementations and monitor measurable business benefits and performance measurement.
- 8. Redesign the City website and focus on online customer service delivery:**
Issue a Request for Proposal to redesign the City website.
- The redesigned website should reflect contemporary web visual design principles.

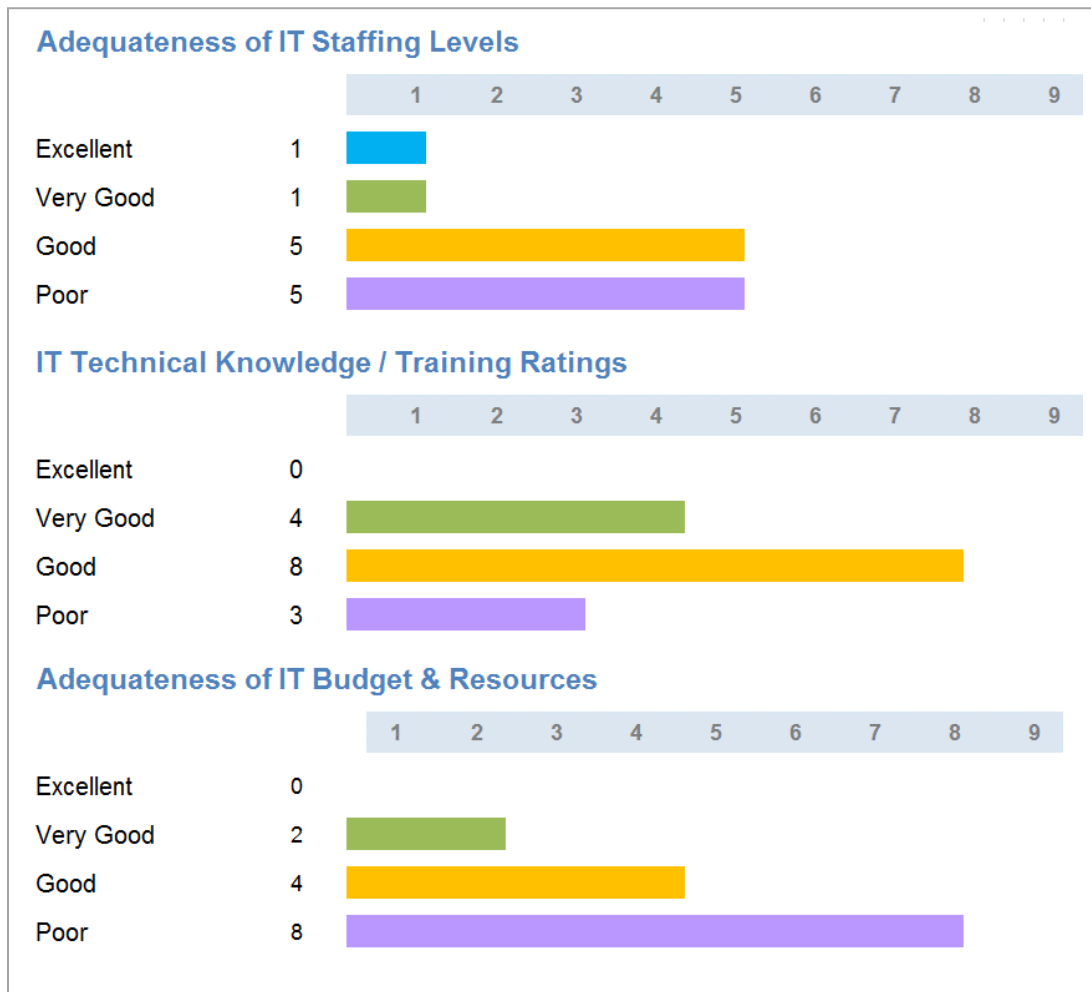


- The website will use E-Government applications to deliver various convenient on-line services to the residents, tourists and business community employing various technologies.
- Adopt a “24-hour City Hall” to provide extraordinary public services.

E 4.4 Management Input

The following figure provides management responses to question related to their perspective regard the IT organization’s ability to provide support and funding.

Figure E 4.4.1: IT Staffing, Training and Budget Level Ratings



The responses above indicate a general consensus that the IT organization has inadequate staffing capacity, average technical knowledge, and insufficient funding to maintain the City’s existing Information Technologies.



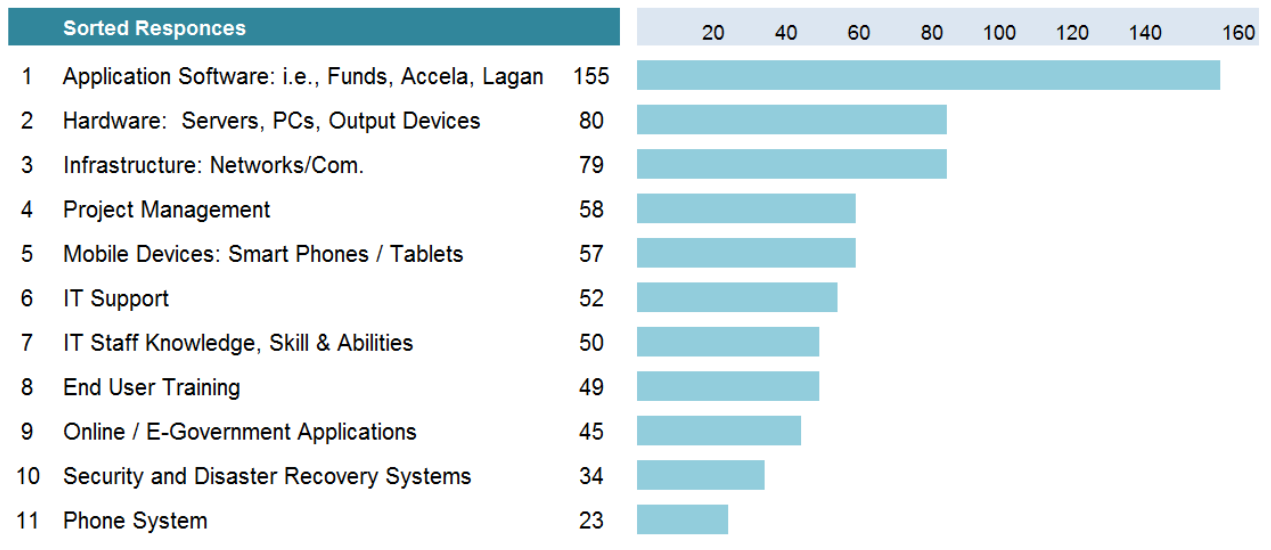
E 4.5 Online Survey Leading IT Requirements

The DSP online survey was posted from June 1 to June 15, 2016. The number of responses was outstanding; two-hundred and thirty-three (233) City staff and management responded. The online survey addressed the following:

- Existing information systems: infrastructure, hardware, and software
Information and data sharing needs
IT support levels
Business and service delivery applications

The following figures provide a summary of the leading technology challenges and requirements identified by City management and staff in the DSP Online Staff Survey.

Figure E 4.5.1: Technologies Requiring the Most Improvement



It is important to note that Project Management is at the top of the list of non-technical areas that require the most improvement, followed by IT Support.

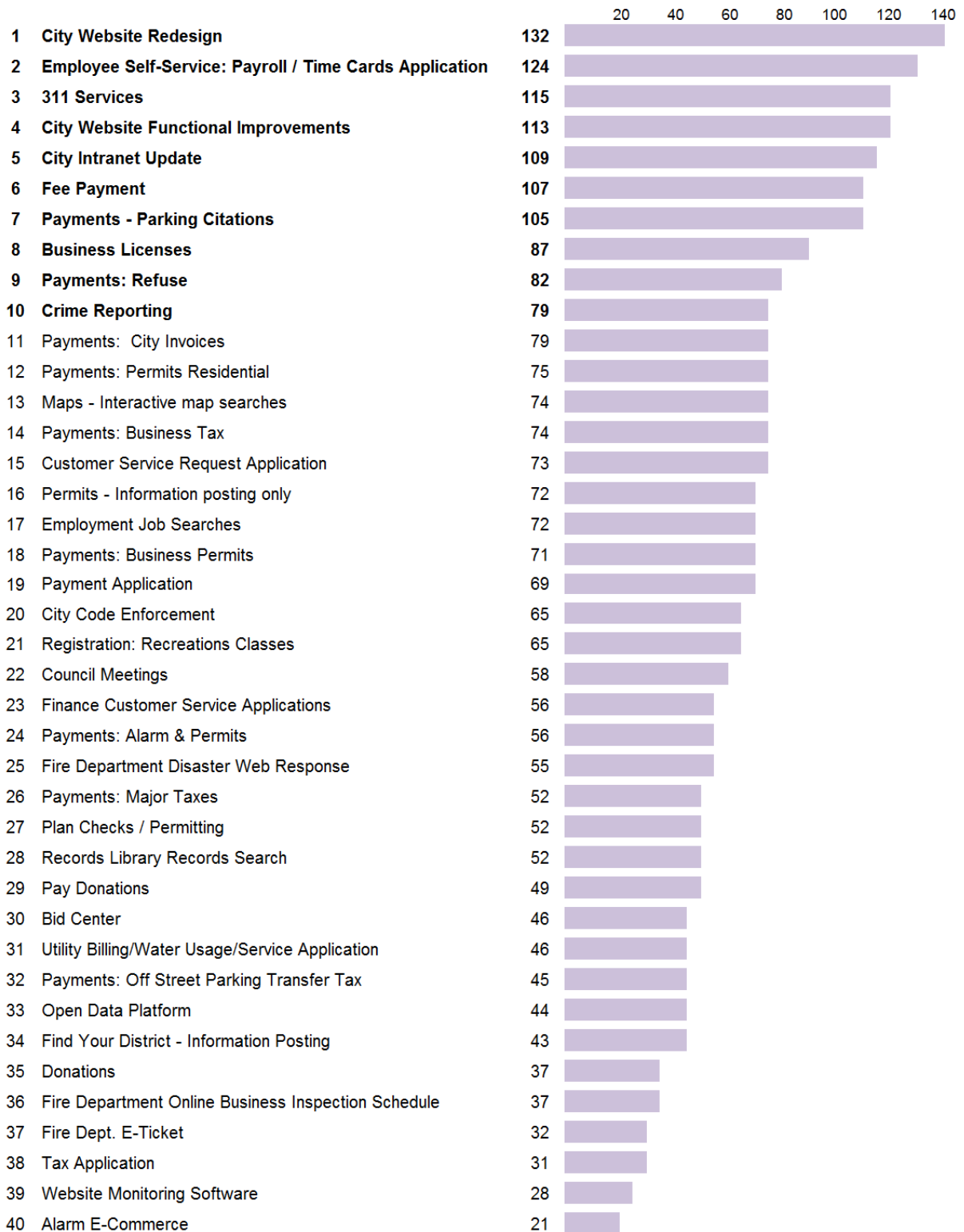
The figure on the following page reflects responses to a question asking what online services City staff would most like to provide the residents of Berkeley. Forty (40) different online apps were provided for staff to pick from.

Key findings from this include the following:

- As consistently indicated in other project tasks, the City Website redesign was rated number 1 and website functionality was 4 out of 40.
311 Services was at the top of the list at number 3.
3 out of the top 10 apps relate to online payments.



Figure E 4.5.2: Online Staff Survey Service Delivery Apps to Improve Customer Service





E 4.6 Business Process / Operational IT Initiatives

The figure below provides a list of technology initiatives identified in the DSP project. The initiatives below represent a list compiled from all of the data sources on the DSP project including: management interviews, IT Focus Groups, Online Staff Survey, and Rapid Workflow® workshops with business process owners.

The initiatives below are grouped by type of technology, then sorted in descending order in terms of how many times they were identified in the course of the project (for general information purposes). However, the initiatives below are not prioritized; initiatives are prioritized in the companion document to this report, the DSP Volume 2: the DSP Roadmap.

Figure E 4.6.1: DSP Technology Initiatives (Not Prioritized)

INF		Infrastructure	
1.	I 2	Wi-Fi Master Plan	2
2.	I 1	Infrastructure Fiber Master Plan	1
3.	I 3	Uninterruptable Power Supply	1
4.	I 4	AC Public Safety Room.....	1
5.	I 5	Upgrade Virtual Servers.....	1
6.	I 6	Web Server Redundancy.....	1
7.	I 7	Print Server Replacement.....	1
HW		Hardware: Servers, Workstations, Peripherals	
8.	HW 1	Video Conferencing.....	2
9.	HW 2	PCs / Hand Held Devices.....	2
10.	HW 3	Printers / Plotters	2
11.	HW 4	Replace Building & Permits Server.....	1
12.	HW 5	Internal Network Security Monitor Appliance	1
D SW		Software: Departmental	
13.	D SW 1	Case Management Application	3
14.	D SW 2	311 Call Center	2
15.	D SW 3	Grant Time Tracking Application.....	2
16.	D SW 4	Public Records Act Request	2
17.	D SW 5	Telestaff Application Upgrade/Replace.....	2
18.	D SW 6	Commissioner Tracking System	1
19.	D SW 7	Permit Summary Application.....	1
20.	D SW 8	CAFR Application	1
21.	D SW 9	Real Quest Enhancement.....	1
22.	D SW 10	Refuse Billing Application.....	1
23.	D SW 11	Route Smart Application	1
24.	D SW 12	Code Enforcement Application	1
25.	D SW 13	Learning Management Application	1
26.	D SW 14	Dog License Application.....	1
27.	D SW 15	Irrigation Management System	1
28.	D SW 16	OPAC Computer Skills Testing Application	1
29.	D SW 17	Help Desk Software	1



Figure E 4.6.1: DSP Technology Initiatives (Not Prioritized): continued

E SW		Software: Enterprise	
30.	E SW 3	Automated Workflow	10
31.	E SW 4	E-Forms.....	10
32.	E SW 5	E-Signatures	8
33.	E SW 2	OnBase ECMS (Imaging, Content Management, Records Management)	14
34.	E SW 9	Customer Relationship Management.....	5
35.	E SW 11	Accela Enhancements	4
36.	E SW 8	Contract Management.....	4
37.	E SW 1	Enterprise Taxonomy	3
38.	E SW 21	ERP	3
39.	E SW 6	Project Management.....	3
40.	E SW 7	Asset Management	2
41.	E SW 19	E-Fax System.....	1
42.	E SW 20	Office 365.....	1
EGOV		E-Government	
43.	EG 1	Website Redesign	9
44.	EG 2	Web Content Management Software	4
45.	EG 3	Social Media	4
46.	EG 4	Intranet Enhancement.....	1
47.	EG 5	OED Online Loan Application	1
48.	EG 5	Accela Online Applications.....	1
AI		Application Integration (Not specific initiatives, for information purposes)	
	AI 1	Muni Services to GIS	1
	AI 2	Loan Application to GIS	1
	AI 3	Worker's Comp to OnBase	1
	AI 4	ERP Budget to OnBase	1
	AI 5	ERP Budget to Open Portal	1
	AI 6	ERP Budget to OnBase	1

One of the requirements of the DSP project is to get an overarching view of planned IT initiatives. The figure on the following page provides a list of previously identified IT projects including infrastructure, department and enterprise application software projects.

Some of the projects identified by the City during the current fiscal year and those identified in the course of the DSP project are duplicated. These two lists are reconciled and prioritized in Vol. II, DSP Roadmap. Moreover, the reconciled lists of IT initiatives are laid out over a 5-year timeline with corresponding budget estimates.



Figure E 4.6.2: Existing List of IT Initiatives

Legend of Acronyms:

SOW	Scope of Work Developed
IP	In-progress
WS	Workshop Requirement

Infrastructure Projects		Dept.	IT Div.	SOW
1.	Office 2013 Deployment and Training Citywide	Citywide	NetOps	Yes
2.	PSB SAN/VM Upgrades Citywide	Citywide	NetOps	Yes
3.	Network Bandwidth Upgrades (ASE) Citywide	Citywide	NetOps	Yes
4.	Print Server Upgrade Citywide	Citywide	NetOps	Yes
5.	Confluence Wiki - Pilot	Pilot	NetOps	Yes
6.	1947 Center St Mental Health Clinic Emergency Relocation	Citywide	NetOps	Yes
7.	Microsoft Enterprise Upgrades	Citywide	NetOps	Yes
8.	City Council Chambers Infrastructure	City Clerk	NetOps	Yes
9.	OnBase Deployment - Stellent Replacement Citywide	Citywide	NetOps	Yes
10.	PSB Server Room HVAC Upgrade (Aug 2016) Citywide	Citywide	NetOps	Yes
11.	Mobile Data Computer HW Replacement Police & Fire	Police / Fire	NetOps	Yes
12.	Windows Server 2003 OS Upgrade/Migration	Citywide	NetOps	Yes
13.	SQL Server 2005 Upgrade/Migration Citywide	Citywide	NetOps	Yes
14.	Internet Bandwidth increase / Internet Backup	Citywide	NetOps	Yes
15.	SCCM Upgrade Citywide	Citywide	NetOps	Yes
16.	Solarwinds Monitoring	Citywide	NetOps	Yes
17.	Upgrade Marina Public Wi-Fi for Berthers	PRW	NetOps	Yes
18.	Department Operations Center (DOC)	Public Works	NetOps	Yes
19.	MS Enterprise Upgrades O365 Migration Exchange SharePoint Portal	Citywide	NetOps	Yes
20.	IT Asset Inventory Replacement, Enterprise PM Tool	Citywide	NetOps	Yes
21.	Conference Room Upgrades Citywide	Citywide	NetOps	Yes
22.	Mental Health Clinic Remodel	HHCS	NetOps	Yes
23.	Mobile Crisis Team Incident Log SW Replacement	HHCS	NetOps	Yes
24.	Mobile Devices, Clinicians & Inspectors HHCS (Move NetOps)	HHHCS	Bus Apps	Yes
25.	VOIP Phase II Citywide	Citywide	NetOps	Yes
26.	Security Information & Event Management (SIEM) Reporting	Citywide	NetOps	IP
27.	SharePoint Online Deployment	Citywide	NetOps	No
28.	Develop/Implement City Wide Plan - KIOSKS	Citywide	NetOps	IP
29.	Develop/Implement City Wide Plan - Computer Labs	Citywide	NetOps	IP
30.	Develop/Implement City Wide Plan - Security System Cameras	Citywide	NetOps	No
31.	MS Enterprise Upgrades: O365 Migration/One Drive Migration	Citywide	NetOps	IP

Department Software Projects		Dept.	IT Div.	SOW
32.	Real Property Leasing Software Assessment Citywide	Attorney	Bus Apps	No
33.	Replace Custom Access DB for Commissioner Tracking (CIS)	City Clerk	Bus Apps	No
34.	Lagan Upgrade & Integration IT: 311 Performance Dashboard	IT	311	Yes
35.	Targeted Case Management (TCM) System Implementation	HHCS	Bus Apps	Yes
36.	NextGen EPM-EHR System Projects	HHCS	Bus Apps	Yes
37.	Decade Development	HHCS	Bus Apps	Yes



Findings and Recommendations

38.	RLSS Loan Tracking Software Replacement	HHCS	Bus Apps	No
39.	Elite System Replacement (Housing and HHCS)	HHCS	Bus Apps	No
40.	Youthworks / Temp employees - Online Application	Various Depts.	Bus Apps	No
41.	Online Mapping Solution for Planning Permits	Planning	Bus Apps	IP
42.	New World Upgrade & Migration V 9 - 10.2	Police/Fire	Bus Apps	Yes
43.	New World, Aegis Mobile Upgrade V10.2 to Enter/Fire RMS	Police/Fire	Bus Apps	Yes
44.	Online False Alarm Management & Interface Police	Police/Fire	Bus Apps	Yes
45.	Data Warehouse Migration, Legacy Police RMS/Fire FMIS Data	PD/FD	Bus Apps	No
46.	ARIES Regional Data Sharing Police	Police	Bus Apps	IP
47.	CJIS Advanced Authentication Police	Police	Bus Apps	IP
48.	Telestaff Upgrade	Fire	Bus Apps	IP
49.	Mobile Staff Directory	Fire	Bus Apps	Yes
50.	ePCR Tablet Replacement	Fire	Bus Apps	IP
51.	FireRMS/Red Alert Alternatives	Fire	Bus Apps	IP
52.	CAD Run Card Maintenance	Fire	Bus Apps	Yes
53.	Knox Maintenance	Fire	Bus Apps	Yes
54.	BENS Replacement	Fire	Bus Apps	Yes
55.	New Suppression Inspection System	Fire	Bus Apps	IP
56.	EOC Management Software	Fire	Bus Apps	IP
57.	LPR Program - Citations, GoBerkeley	Police	Bus Apps	IP
58.	LEAP Network	Police	Bus Apps	Yes
59.	Vesta Upgrade	Police	Bus Apps	Yes
60.	Body Worn Cameras	Police	Bus Apps	Yes
61.	Conversion of Microfiche	Police	Bus Apps	IP
62.	Mobile ID	Police	Bus Apps	Yes
63.	New Irrigation Management System	PR&W	Bus Apps	No
64.	New Recreation Registration System	PR&W	Bus Apps	Yes
65.	CRM Landscape Maintenance	PR&W	Bus Apps	Yes
66.	CRM Facilities Phase II - Custom Reports & Marina	PR&W	Bus Apps	Yes
67.	Park Locator App	PR&W	Bus Apps	Yes
68.	Story Map for Major / Minor Maintenances	PR&W	Bus Apps	Yes
69.	Staff Scheduling Software	PR&W	Bus Apps	No
70.	Mobile App for PacSoft	PR&W	Bus Apps	Yes
71.	Capital Project Management Software	PR&W	Bus Apps	No
72.	Demand-Based Parking (goBerkeley)	Public Works	Bus Apps	Yes
73.	Center St. Garage software systems	Public Works	Bus Apps	No
74.	GasBoy Upgrade	Public Works	Bus Apps	No
75.	Zero Waste Route Optimization	Public Works	Bus Apps	No
76.	Public Notification System (Recollect)	Public Works	Bus Apps	No
77.	AMAG (secured entry systems) Consolidation/Replacement	Public Works	Bus Apps	Yes
78.	Commercial Hauling	Public Works	Bus Apps	Yes
79.	Zero Waste Mobile Communication System	Public Works	Bus Apps	No
80.	Rent Stabilization Management System	Rent Board	Bus Apps	No
81.	Rental Registration Portal	Rent Board	Bus Apps	No
82.	Nemo Q Replacement	Fin/Planning	Bus Apps	No



Enterprise Software Projects	Dept.	IT Div.	SOW
83. Accela Implementation	Enterprise	Ent Apps	Yes
84. Website Upgrade	Enterprise	Ent Apps	Yes
85. Enterprise Resource Planning Implementation	Enterprise	Ent Apps	Yes
86. Work Order System (PW, PRW, Forestry)	Enterprise	Ent Apps	Yes
87. Fleet and Facilities Management	Enterprise	Ent Apps	Yes
88. Refuse Billing	Enterprise	Ent Apps	Yes
89. Citizen Request Management (CRM)	Enterprise	311	Yes
90. Implementation for Property Tax Assessment (Replace FUND\$)	Enterprise	Ent Apps	Yes
91. Business License Software Replacement	Enterprise	Ent Apps	Yes
92. Performance Evaluations	Enterprise	Ent Apps	Yes
93. GIS Master Plan Implementation	Enterprise	Ent Apps	GIS
94. Digital Signature	Enterprise	Ent Apps	WS
95. Expansion of Online Services for Community	Enterprise	Ent Apps	WS
96. Paperless Workflows and e-Forms	Enterprise	Ent Apps	WS
97. OnBase Expansion - EDMS to ECM	Enterprise	Ent Apps	WS

E 4.7 DSP Benefits

The DSP Roadmap project identified potential benefits that could be realized by implementing the DSP at the City of Berkeley.

Potential benefits were identified in the Rapid Workflow® workshops, where comprehensive and detailed data was gathered on business process challenges at the City. Benefits include qualitative and quantitative benefits of the proposed technology solutions if implemented, e.g., staff time savings, cost savings, streamline business process, enhanced service delivery, and so on.



Benefits were identified at several levels, e.g., within a section or division for the business process being examined, to the City of Berkeley as a whole, or the public. This information was leveraged to build a compelling business case for IT initiatives, and for prioritizing DSP initiatives in the DSP Roadmap. A total of eight-hundred and eighty-six (886) potential benefits were identified in twenty-five (25) business process workshops, an average of thirty-four (34) benefits opportunities per mission critical business process. These were grouped into forty-five (45) types of potential benefits.

The figure on the following page provides the top forty (40) potential benefits that will be derived by approving and funding the DSP. (The number in the column shown as “Qty.” indicate the number of times these benefits were identified in all of the Rapid Workflow® workshops.)

While these benefits are not quantified in terms of hard dollars, the figure below provides a level of magnitude on the potential impact that DSP initiatives offer the City of Berkeley and its constituents.



Figure E 4.7.1: DSP Potential Benefits





Section 1

Introduction

1.1 Project Background, Goal & Objectives

The goal of the Digital Strategic Plan and Roadmap (DSP) is to identify internal and external municipal technology needs; the role of Information Services within the organization; and responsive technology solutions that will allow the IT organization to provide exemplary services to the community of Berkeley. In addition, the DSP will help guide the City in responsive technology planning and sound investments.

The objective of the DSP is to provide a 5-year DSP Roadmap employing a highly participatory process directly engaging City departments and staff. The DSP contains actionable recommendations that will guide and shape how Berkeley delivers innovative and effective technology services throughout the organization and to the community at large.

This report is accompanied by a second volume, Part II: DSP Roadmap focusing on prioritization, budgeting and deployment timelines. As such, the following pages address “what” should be done, and the implementation Roadmap addresses “when” and at “what cost.”





The objectives of the DSP are to:

- Connect technology resources, innovation, and initiatives to the City of Berkeley's Strategic Plan. Furthermore, facilitate excellence in municipal services, civic participation, and community wellbeing.
- Serve as the framework for how IT services will be delivered to the City with an enterprise focus to integrate existing and new systems to provide business process improvement.
- Define a clear set of goals, guiding principles, and strategic priorities for accomplishing the City's objectives:
 - Information Technology Strategy
 - Guiding Principles
 - Implementation Roadmap
- The Digital Strategic Plan contains actionable objectives, and will be the guiding document that shapes how the City delivers innovative, unified, and effective technology services throughout the organization and to the community.

To this end, the implementation of future business systems and Information Technology projects must be properly prioritized, scheduled, and coordinated as part of an enterprise DSP. Implementation of the DSP Roadmap will help ensure the City's technological advancement by making logical and sound investments in physical resources (i.e., hardware, software, integrated systems, etc.) and human resources (staff and training).

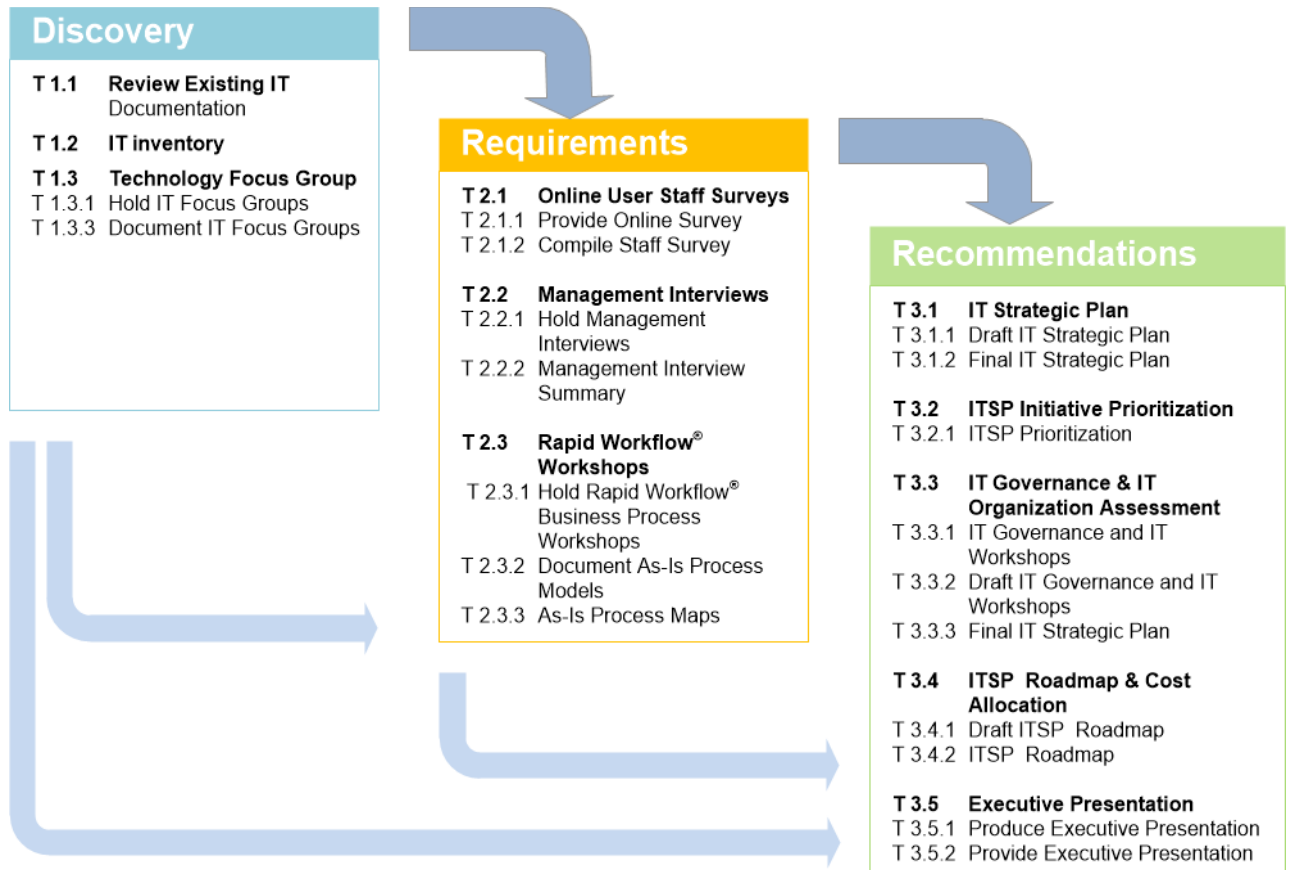
1.2 Digital Strategic Plan Roadmap Project Approach

The DSP project employed a comprehensive, logical and structured "waterfall" approach relying on the collection, assessment, and synthesis of various types of information, including:

- Documentation of Current Technology
- IT Systems Inventory
- Management Interview data
- City Staff Online Survey data
- IT Focus Groups data
- Rapid Workflow® Business Process Analysis Workshop data.

Figure 1.2.1 on the following page illustrates the approach used on the DSP Roadmap project. As shown, the project was broken out into three phases: Discovery, Analysis / Requirements, and Recommendations / Strategy.

Figure 1.2.1: Comprehensive Project Methodology



Data from one phase is referenced in subsequent project phases and forms the basis for the final recommendations and strategy.

Phase 1: The Discovery Phase established a baseline understanding of the City’s IT and business systems environment, including a survey of existing information technologies.

Phase 2: The Analysis/Requirements Phase engaged a broad section of stakeholders, including:

- City Department Heads: in management interviews soliciting a Management perspective on current and future operating challenges faced by Departments.
- City staff: twenty-six (26) business requirements workshops were held to address departmental and enterprise operating needs. Over two hundred (200) City/Contractor staff and management participated, with several contributing input in more than one session.
- IT staff: in five focus groups addressing Infrastructure, Hardware, Software, 311, and Service Delivery.

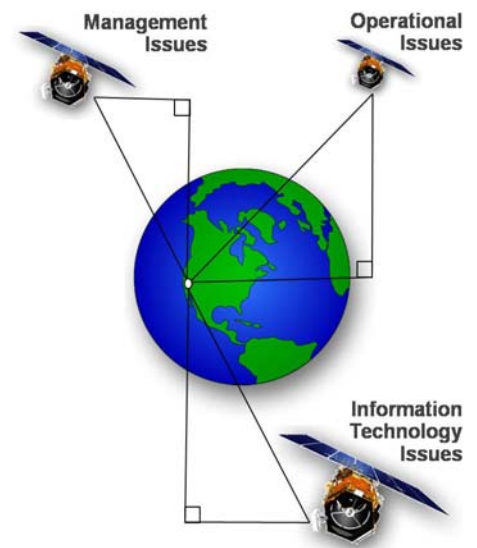
Phase 3: The Strategic Plan Roadmap Phase: which synthesized all of the data collected in previous tasks to produce the findings, recommendations and implementation plan, including prioritized technology initiatives.

The DSP Roadmap identifies opportunities for improving business process and customer service through policy, process and/or Information Technology initiatives. ThirdWave used a comprehensive analysis to produce a pragmatic DSP Roadmap custom tailored for the specific needs of the City of Berkeley.

Figure 1.2.2: Comprehensive Project Framework

ThirdWave’s Digital Strategic Planning framework triangulates on all key facets of the organization to get a crisp definition of business, functional and technology requirements to produce responsive and actionable recommendations. The project employed a highly participatory process engaging the entire cross section of stakeholders including:

- **Management Interviews:** To address business unit missions, business architecture, governance structure, management policies, strategic planning, fiscal and staff resource allocation to effectively sustain the Roadmap.
- **Operational/Business Process Workshops:** To address opportunities for streamlined business processes, methods and procedures, and the service delivery tools required by staff to provide extraordinary service delivery.
- **Technology Focus Groups:** To address strategic information technologies with the appropriate infrastructure, hardware, software, Enterprise Architecture, organizational structure, knowledge, skills and abilities; standards and best practices.



ThirdWave’s IT Strategic Planning Triangulation Framework ©1988

The findings and recommendations in this document respond to management, operational, and technology requirements collected in various project tasks. ThirdWave’s Digital Strategic Planning Triangulation Framework recognizes that a viable IT strategy addresses all needs of the organization, including the needs of the constituents.

This document is not meant to be read in one sitting; it is a reference guide – a roadmap for a five-year journey. The DSP provides the rationale and technical description of strategic business/IT initiatives, facilitating the effective planning, procurement, implementation and management of information systems at the City of Berkeley.

Volume 1 DSP Findings & Recommendations (this document) describes “what” the City should do, Volume 2, the DSP Roadmap describes “when” and at what cost.



Section 2

Requirements Definition Findings

2.1 Management Requirements Findings

Management requirements were gathered via interviews; the objectives included the following:

1. Obtain a management perspective on unique business challenges facing each department.
2. Gather city-wide functional, operational and service delivery requirements.
3. Solicit management opinion on the existing IT organization and the level of their support services.



Department heads from the following organizations participated in the management interviews:

- | | |
|---|------------------------------------|
| 1. City Attorney | 9. Information Technology |
| 2. City Clerk | 10. Public Works |
| 3. City Auditor | 11. Planning |
| 4. City Manager | 12. Police |
| 5. Finance | 13. Parks, Recreation & Waterfront |
| 6. Fire | 14. Library |
| 7. Health, Housing and Community Services | 15. Rent Board |
| 8. Human Resources | |

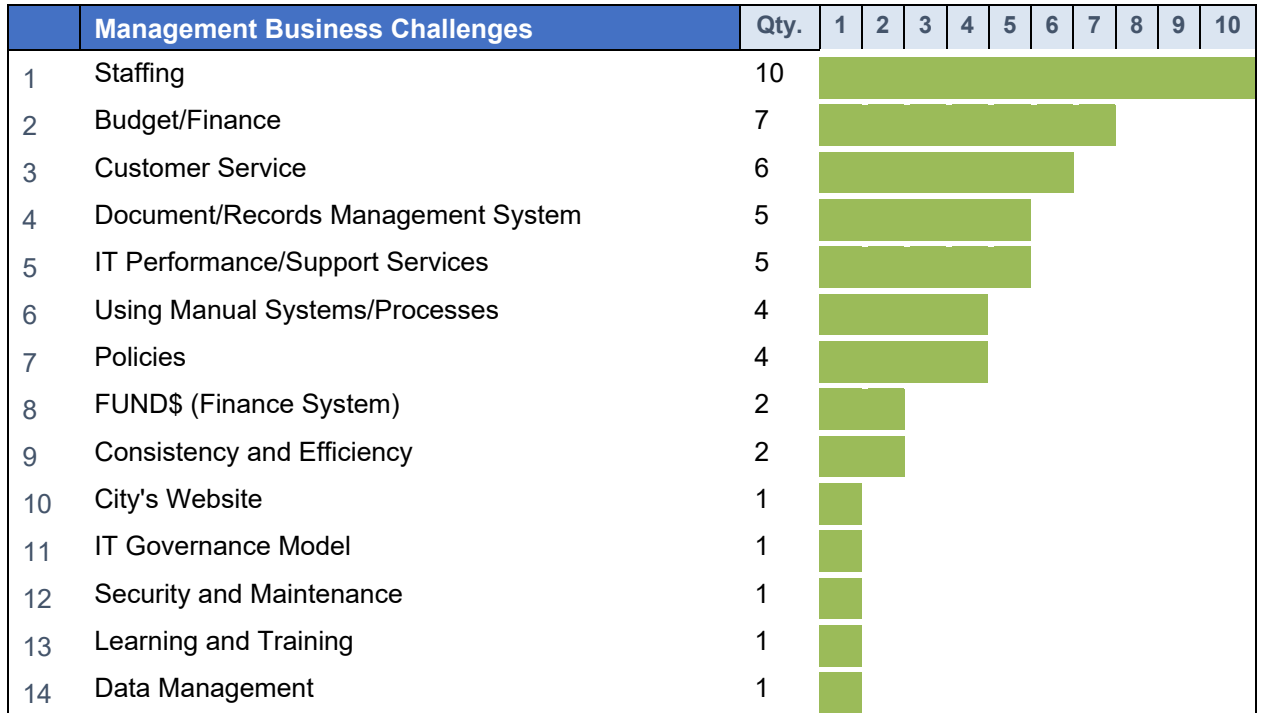
The figures below summarize the data collected from the City’s leadership team including the most significant management, business and technology challenges. Department challenges are shown on the left and corresponding number of times an existing challenge was mentioned is reflected under the quantity (Qty.) column, illustrated by the Gant chart. The responses are for



the following question: *“What are the most significant operational and/or service delivery (not technology) challenges facing your department at the present, and in the next 3 to 5 years?”*

The management responses have been generalized and grouped into similar responses in the figure below.

Figure 2.1.1: Management Team Business Challenges



The most significant management/operational challenge facing City executives are noted in the first five items on the list, led by staff shortages. This is consistent with other data collected in the project.

The most significant technology challenge identified in this response is document/records management.

The figure on the following page provides a summary of technology challenges identified in the City’s management team interviews.



Figure 2.1.2: Management Team Technology Challenges

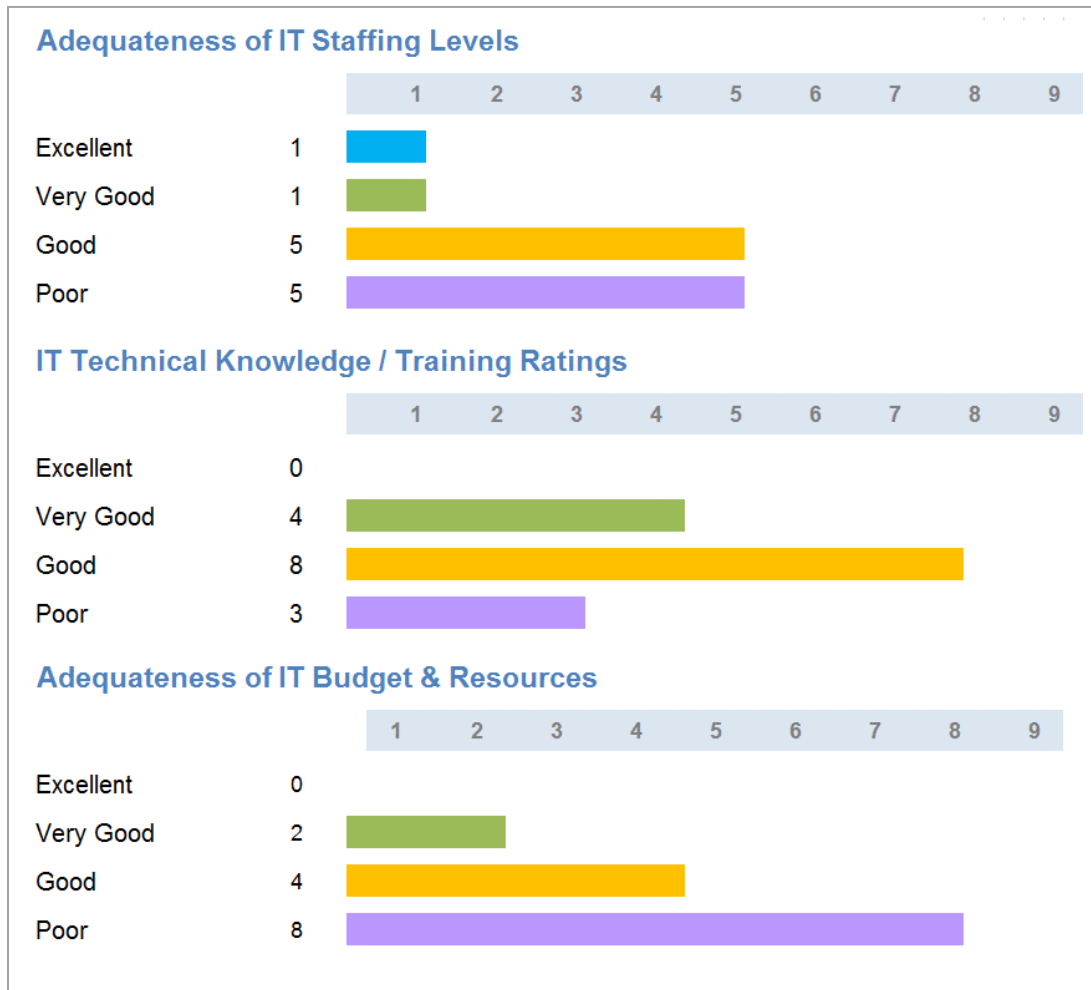
Management Technology Challenges		Qty.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Applications (permits, online payment, etc.)	14	[Bar extending to 14]													
2	Enterprise Content Management System	11	[Bar extending to 11]													
3	City Website	9	[Bar extending to 9]													
4	System Operation Issues	8	[Bar extending to 8]													
5	New ERP/Issues with FUND\$	5	[Bar extending to 5]													
6	System Implementation Delays/Problems	5	[Bar extending to 5]													
7	The Cost and Funding of New Systems	3	[Bar extending to 3]													
8	Server Failures	3	[Bar extending to 3]													
9	Lack IT Staff/Support	3	[Bar extending to 3]													
10	Outdated Software (ILS, AMAG, etc.)	3	[Bar extending to 3]													
11	Social Media	2	[Bar extending to 2]													
12	WAN/LANS	2	[Bar extending to 2]													
13	CRM Solution	2	[Bar extending to 2]													
14	Document Indexing/Taxonomy	1	[Bar extending to 1]													
15	Intranet	1	[Bar extending to 1]													
16	Networked PCs	1	[Bar extending to 1]													
17	Eliminate Shadow Systems	1	[Bar extending to 1]													
18	IT Funding	1	[Bar extending to 1]													
19	Video Conferencing	1	[Bar extending to 1]													
20	Need Reliable Wi-Fi	1	[Bar extending to 1]													
21	Storage of Multimedia	1	[Bar extending to 1]													
22	VOIP with Current Tools	1	[Bar extending to 1]													
23	Capital Projects	1	[Bar extending to 1]													

The most significant management technology challenges facing City executives entail the City’s application software, Enterprise Content Management System and the City’s website. The data coincides with data collected in the IT Focus Groups, Online Staff Survey and the Rapid Workflow® workshops.

The figure on the following page provides a listing of management responses for the following question: “What is your department’s level of satisfaction with the IT organization’s ability to support your department’s current or projected needs based on your perception of one or more of the following?” The management responses have been generalized and grouped into similar responses.



Figure 2.1.3: IT Staffing, Knowledge and Resources Allocation



2.1.1 Summary of Management Interviews

The management interviews revealed the following:

Management/Operational Challenges

- IT staffing levels received the second highest “Poor” rating in all topics covered in the management interviews.
- The adequateness of staffing rated “Excellent” and “Very Good” only once each, with “Good/Poor” rating the prominent ratings.

Technology Knowledge Challenges

- Management ratings on this question were the best scores of all three ratings. With the majority of scores going from “Good” to “Very Good.”
- Written comments reflected the need of IT skills training.



IT Budget & Resource Challenges

- There was a general consensus that the City does not invest enough in the technology and the IT organization.
• This item received the lowest ratings from the management team.

The most obvious observation that can be made of the forgoing data is that only 2 out of 53 responses, or 3%, responded with an answer of "Excellent." There is clearly substantial room for improvement in the City's IT organization, something the City's IT Director is acutely focused on.

2.2 Information Technology Focus Group Findings

The following pages provide a summary of comments and findings from four Focus Groups held with IT staff from the City's IT organization regarding the City's Information Technology portfolio and operations. The following illustrates the nature of challenges and opportunities facing the City in five key technology areas as perceived by IT staff:



- Infrastructure
• Hardware
• Software
• 311 Call Center
• Sustainability & Service Delivery.

Legend:

- M Management Issues: related to finance, organizational structure, staffing, training, and/or policy.
O Operational Issues: related to operations, service delivery, methods and/or procedures.
T Technology Issues: related to any aspect of information technology.

Table with 5 columns: Item ID, Item Name, M, O, T. Rows include Infrastructure, Network Infrastructure, Telecommunication Infrastructure, Data Centers, and Data Storage.



2. Hardware **M O T**

2.1 Servers: Application, Database and Web Servers

- 1. Lack of Web Server Redundancy ■
- 2. Lack of Documentation with the City Council Live Webcast ■
- 3. Print Server is crashing, resulting in having to restore from backup..... ■
- 4. Adding/Removing User Accounts in Active Directory not well coordinated..... ■

2.2 Personal Computers

- 1. Office 2013 Applications are freezing and crashing ■

2.3 Laptops

- 1. Citywide Laptop Inventory is aging and behind in Windows updates..... ■

2.4 Mobile Devices: Tablets/Smart Phones

- 1. High administrative cost to support Mobile Devices (iPhones and iPads)..... ■
- 2. Inconsistent Provisioning of Windows-based Tablets..... ■

3. Software **M O T**

3.1 Department Applications

- 1. Accela application Platform Change Management is difficult to administer ■
- 2. NextGen EPM-EHR (5 years old) ■
- 3. Rent Board application critical functionality (2 years old) ■

3.2 Enterprise Applications

- 1. Lagan not the right Citizen Relationship Management solution (8.5 yrs. old) ■
- 2. OnBase/Records Online is underutilized (deployed recently) ■

3.3 E-Government/Online Applications

- 1. Too many systems for managing customer solutions..... ■
- 2. Parcel Popper data is out of synch and becoming more difficult to administer ■

4. 311 Call Center Focus Group Input **M O T**

4.1 Technology

- 1. Current CRM (Lagan) Features & Functions are not fulfilling the City's needs ■
- 2. Current staffing levels and resources in 311 limit ability to maintain a City Goal of 95% answer rate..... ■
- 3. 311 needs training commitment from Client department to maintain and exceed Staff Skills, Knowledge & Abilities ■
- 4. 311 needs to find resource documents quickly and efficiently on shared drive (S Drive) when actively on the phone with customers ■
- 5. Current 311 Call Center staffing hours do not allow for staff to communicate with management or work cases within their personal queues ■



5. Operations & Sustainability		M	O	T
5.1 IT Organizational Structure				
5.1.1	IT Staff Resources KSAs			
	1. Cyber security and resiliency is a large liability for the City of Berkeley.....	■		
	2. There is a significant disconnect between staff's current, needed, and future knowledge, skills, and abilities and industry best practices.....	■		
	3. Existing IT processes and decisions are not aligned with industry best practices.....			■
5.1.2	Technology Staff Levels			
	1. There is a perception of consistent understaffing throughout all IT divisions.....	■		
5.2 Project Management: Project tracking, Reporting and Prioritization				
	1. The current IT governance process struggles to manage business requirements, department and city-wide priorities, and decision making.....	■		
5.3 Resource Planning: Cost / Budget Allocation, Business Process Work Flow				
	1. The existing technology infrastructure is a large unfunded liability.....	■		
5.4 Business Continuity & Disaster Recovery				
	1. The City of Berkeley does not have an official Business Continuity Plan.....	■		
	2. The City of Berkeley does not have a Disaster Recovery (DR) Plan.....	■		
5.5 Physical Security				
	1. Physical security of all properties, buildings, and staff is extremely limited.....	■		
5.6 Help Desk				
	1. IT needs a tool to track assets, documentation, and service requests.....			■



2.2.1 Summary of IT Focus Groups

The figure below provides a high level overview of the five technology support areas addressed in the IT Focus Groups. The Gant chart illustrates the number of times an issue was identified by IT staff.

Figure 2.2.1.1: IT Focus Group Problem Statement Dashboard

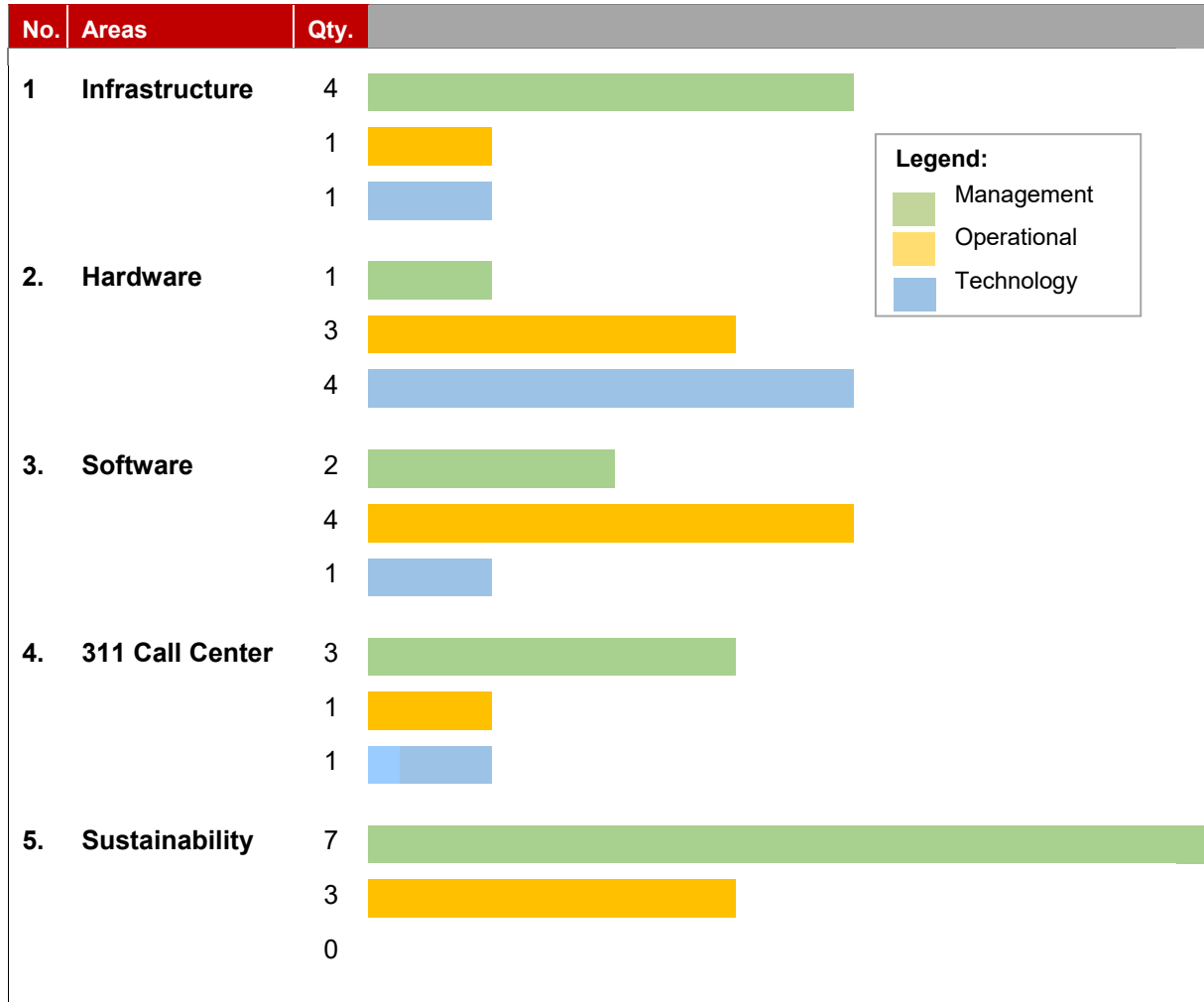


Figure 2.3.1.2 below provides an overall summary of the challenges identified by IT staff during the IT Focus Groups, which gathered information directly from the City’s technical professionals. While the compiled instances of management, operational, and technology problems are not weighted, this dashboard provides a general indicator of existing challenges identified by the City of Berkeley’s IT staff.



Figure 2.2.1.2: Overall Summary of IT Department Challenges

Dashboard	Qty	%	
Management	17	47%	<div style="width: 47%; background-color: #90EE90;"></div>
Operational	12	33%	<div style="width: 33%; background-color: #FFD700;"></div>
Technology	7	19%	<div style="width: 19%; background-color: #6495ED;"></div>
	36	100	

The figure summarizes the data from Figure 2.2.1.1 above and indicates that the most significant challenges faced by the IT organization relate to management issues. (The solutions from the IT Focus Groups are incorporated into section 2.5 Summary of Technology Requirements.)

This data is aligned with other findings in the discovery and requirements definition phases of the project, namely that the existing IT organization has significant challenges in how it provides technology leadership, operates, provides services to City departments, and supports the City's information systems. These issues are addressed in section 3.2.2, Operational Recommendations, of this document.

2.3 City Staff Online Survey

The data on the following pages was gathered via an online survey that allowed all City staff the opportunity to provide input on their perception of the City's Information Technologies and the IT organization's ability to support the City's needs. The DSP online survey was posted from June 1 to June 15, 2016. The number of responses was outstanding; two-hundred and thirty-three (233) City staff and management responded.

The online survey addressed the following:

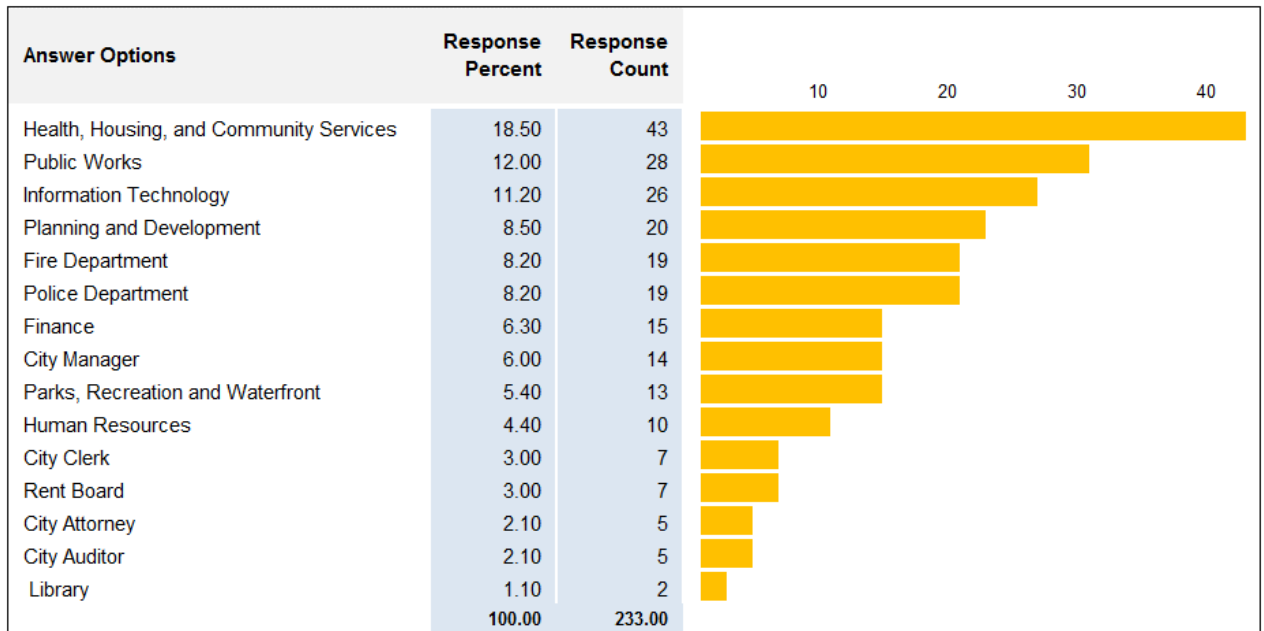
- Existing information systems: infrastructure hardware, and software
- Information and data sharing needs
- IT support levels
- Business and service delivery applications

The following figure illustrates the degree of City staff participation sorted by departments in descending order. Generally speaking, the survey received a great response.



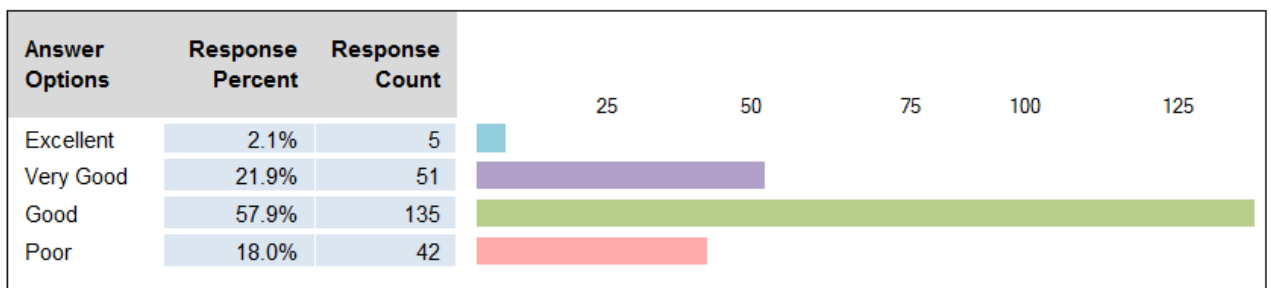


Figure 2.3.1: City Staff Participation



The figures on the following pages provide the sorted responses on what City staff and management perceive the condition of existing systems used at the City. City staff generally rated the tools currently used as “Good.”

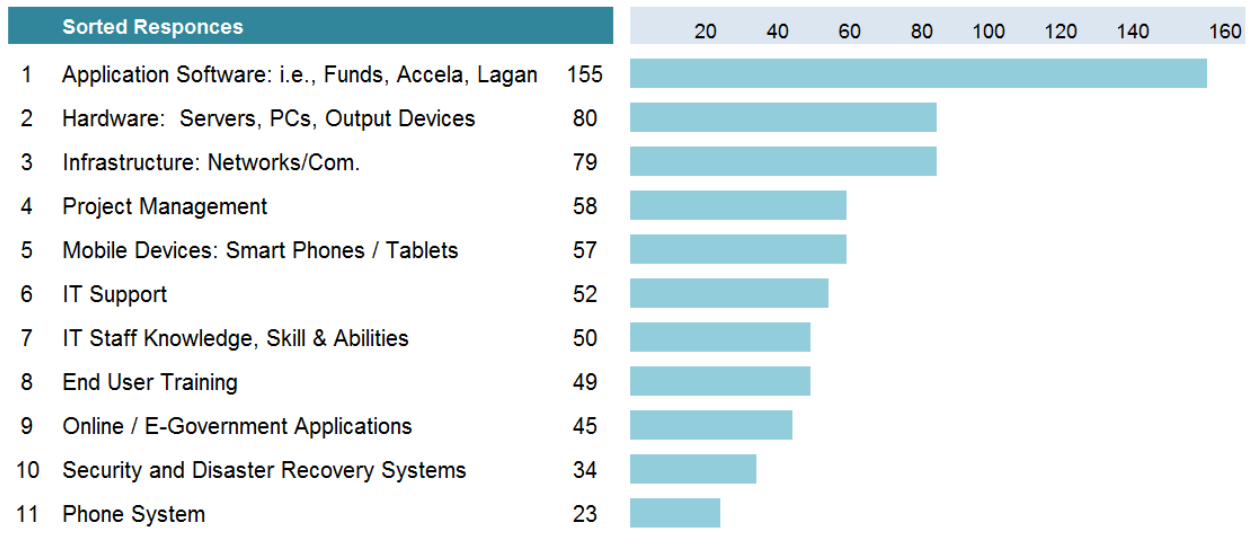
Figure 2.3.2: Overall Condition of Information Systems Rating



The figures below provide responses for key questions in the City staff survey, summarized in a graphical format.

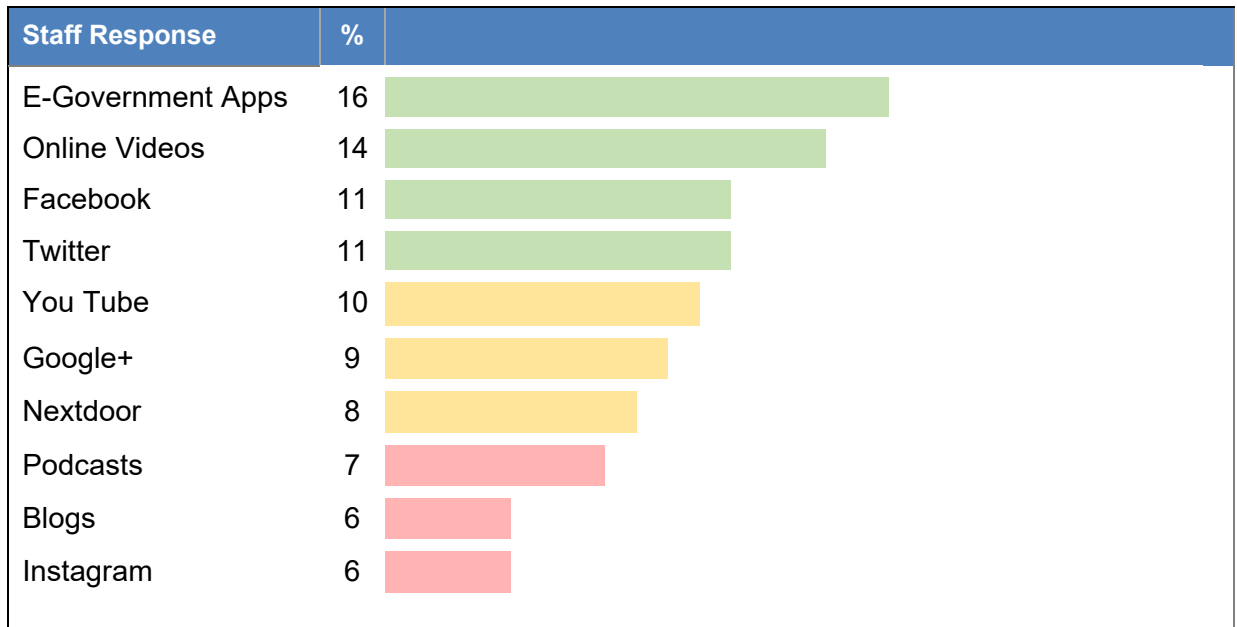


Figure 2.3.3: Technologies Requiring the Most Improvement



The figure below addresses responses on a variety of web/social media tools presented to City staff as possible solutions to enhance the ability to connect with the public and enhance customer services. E-Government Apps are the clear leader followed by online video and Facebook and Twitter. These numbers were derived from combining “Very Important” and “Important” answers in the survey.

Figure 2.3.4: Web Technologies for Enhancing Customer Service



Legend: ■ Most Important ■ Important ■ Least Important



2.4 Leading Technology Initiatives

The figure below provides a list of the technology initiatives identified in the DSP project. (The number at the right indicates the total number of times mentioned in the requirements definition tasks.) It bears noting that the initiatives identified in Figure 2.5.1 are not final; they are provided here for informational purposes and future reference. They will be prioritized in the DSP Implementation Roadmap.

Figure 2.4.1: Technology Initiatives Identified (Not Prioritized)

INF		Infrastructure	
1	I 1	Route Smart Application	1
2	I 2	Reliable Wi-Fi in Marina	1
3	I 3	Uninterruptable Power Supply	1
4	I 4	AC Public Safety Room.....	1
5	I 5	Upgrade Virtual Servers.....	1
6	I 6	Web Server Redundancy.....	1
7	I 7	Print Server Replacement.....	1
HW		Hardware: Servers, Workstations, Peripherals	
8	HW 1	Replace Building & Permits Server	1
9	HW 2	Intern. Network Security Monitor Appliance.....	1
10	HW 3	Video Conferencing.....	1
D SW		Software: Departmental	
11	D SW 1	Commissioner Tracking System	1
12	D SW 2	Permit Summary Application.....	1
13	D SW 3	CAFR Application	1
14	D SW 4	Real Quest Enhancement.....	1
15	D SW 5	Refuse Billing Application.....	1
16	D SW 6	Route Smart Application	1
17	D SW 7	Code Enforcement Application	1
18	D SW 8	Grant Time Tracking Application.....	2
19	D SW 9	Learning Management Application	1
20	D SW 10	Dog License Application.....	1
21	D SW 11	Telestaff Application Upgrade/Replace.....	2
22	D SW 12	Public Records Act Request	2
23	D SW 13	Irrigation Management System	1
24	D SW 14	Case Management Application	3
25	D SW 15	311 Call Center	0
26	D SW 16	OPAC Computer Skills Testing Application	1
27	D SW 17	Help Desk Software	1



Figure 2.4.1: Technology Initiatives Identified (Not Prioritized) continued

E SW		Software: Enterprise	
28	E SW 1	Web Content Management Software	1
29	E SW 2	OnBase ECMS	0
	E SW 2.1	Enterprise Taxonomy	2
	E SW 2.2	Imaging	0
	E SW 2.3	Enterprise Content Management	8
	E SW 2.4	Enterprise Records Management.....	1
	E SW 2.5	Automated Workflow	9
30	E SW 8	E-Forms.....	9
31	E SW 9	E-Signatures	7
32	E SW 10	Backfile Conversion	0
33	E SW 11	Project Management	2
34	E SW 12	Worker's Comp Application.....	2
35	E SW 13	Inventory Management	1
36	E SW 14	Asset Management	2
37	E SW 15	Contract Management.....	4
38	E SW 16	Lease Management	1
39	E SW 17	Customer Relationship Management.....	5
40	E SW 18	Accela Enhancements/Issues	4
41	E SW 19	E-Fax System.....	1
42	E SW 20	Office 365.....	1
43	E SW 21	ERP	2
44		E SW 11.1 Budget Application.....	2
45		E SW 11.2 General Ledger.....	1
46		E SW 11.4 Accounts Receivable Application	1
47		E SW 11.5 Accounts Payable Application	1
48		E SW 11.3 Purchasing.....	1
49	E SW 27	Business Intelligence	2
EGOV		E-Government	
50	EG 1	Web Content Management Software	3
51	EG 2	Website Redesign	8
52	EG 3	Social Media	3
53	EG 4	Intranet Enhancement.....	1
53	EG 5	OED Online Loan Application	1
	EG 5	Accela Online Applications.....	1
AI		Application Integration	
55	AI 1	Muni Services to GIS	1
56	AI 2	Loan Application to GIS	1
57	AI 3	Worker's Comp to OnBase	1
58	AI 4	ERP Budget to OnBase	1
59	AI 5	ERP Budget to Open Portal	1



The figures on the following pages (Figures 2.5.3 through 2.5.7) illustrate where each of the initiatives shown above was identified in the DSP Roadmap project, e.g., management interviews, IT Focus Groups, or Rapid Workflow® workshops. This is important for traceability; in future years of the DSP Implementation Roadmap, City staff will be able to reference where recommendations came from.

Figure 2.4.2: Enterprise Initiative Matrix

		Software Departmental							Software Enterprise										
		11	12	13	14	15	16	17	18	19	20	21	22						
No.	Rapid Workflow Business Process	Online Permitting (Replace Innoprise)	E-Land Dev. Permits (Replace Innoprise)	Online Liquor License	Code Enforcement App (Cartegraph)	Online RAW Permitting Application	Intelligent Transportation Systems Strateg	Chameleon	ECMS	Imaging	Enterprise Content Managemnt	Enterprise Records Management	Automated Workflow	Agenda Management	Email Management	E-Forms	E-Signatures	Enterprise Taxonomy	Backfile Conversion
1	Public Works Facilities Managemnt										■		■						
2	City Clerk Agenda Management								■	■	■	■				■	■		

How to read the matrices:

The enterprise initiative matrix provides a list of Rapid Workflow® process workshops, IT Focus Groups and Management Interview requirements on the left column. The table is meant to be read by line item from left to right. Each square symbols on that line indicates an IT initiative identified in that workshop, focus group or interview. The technology initiative is denoted above in the vertical text. In this illustration, the first initiative for the Public Works Facilities Management workshop is Enterprise Content Management; the second initiative is Automated Workflow, and so on.

Written descriptions for DSP initiatives are provided in Section 3, Digital Strategic Plan Roadmap Recommendations, in this document. The list of IT Strategic Roadmap initiatives shown above went through a formal prioritization process, which is presented in Volume 2 of the DSP Roadmap.

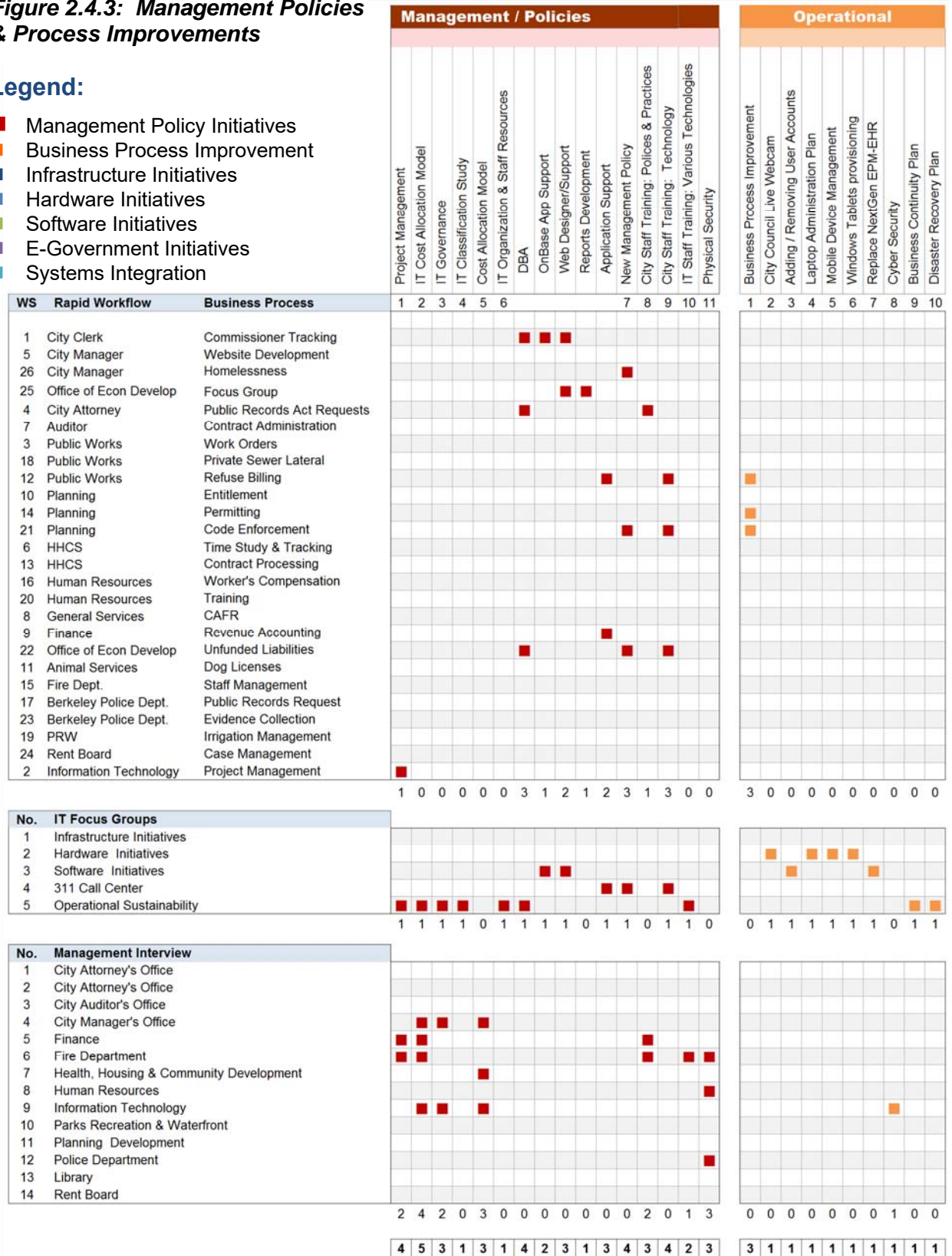


Findings and Recommendations

Figure 2.4.3: Management Policies & Process Improvements

Legend:

- Management Policy Initiatives
- Business Process Improvement
- Infrastructure Initiatives
- Hardware Initiatives
- Software Initiatives
- E-Government Initiatives
- Systems Integration





Findings and Recommendations

Figure 2.4.4: Infrastructure & Hardware Requirements

Legend:

- Management Policy Initiatives
- Business Process Improvement
- Infrastructure Initiatives
- Hardware Initiatives
- Software Initiatives
- E-Government Initiatives
- Systems Integration

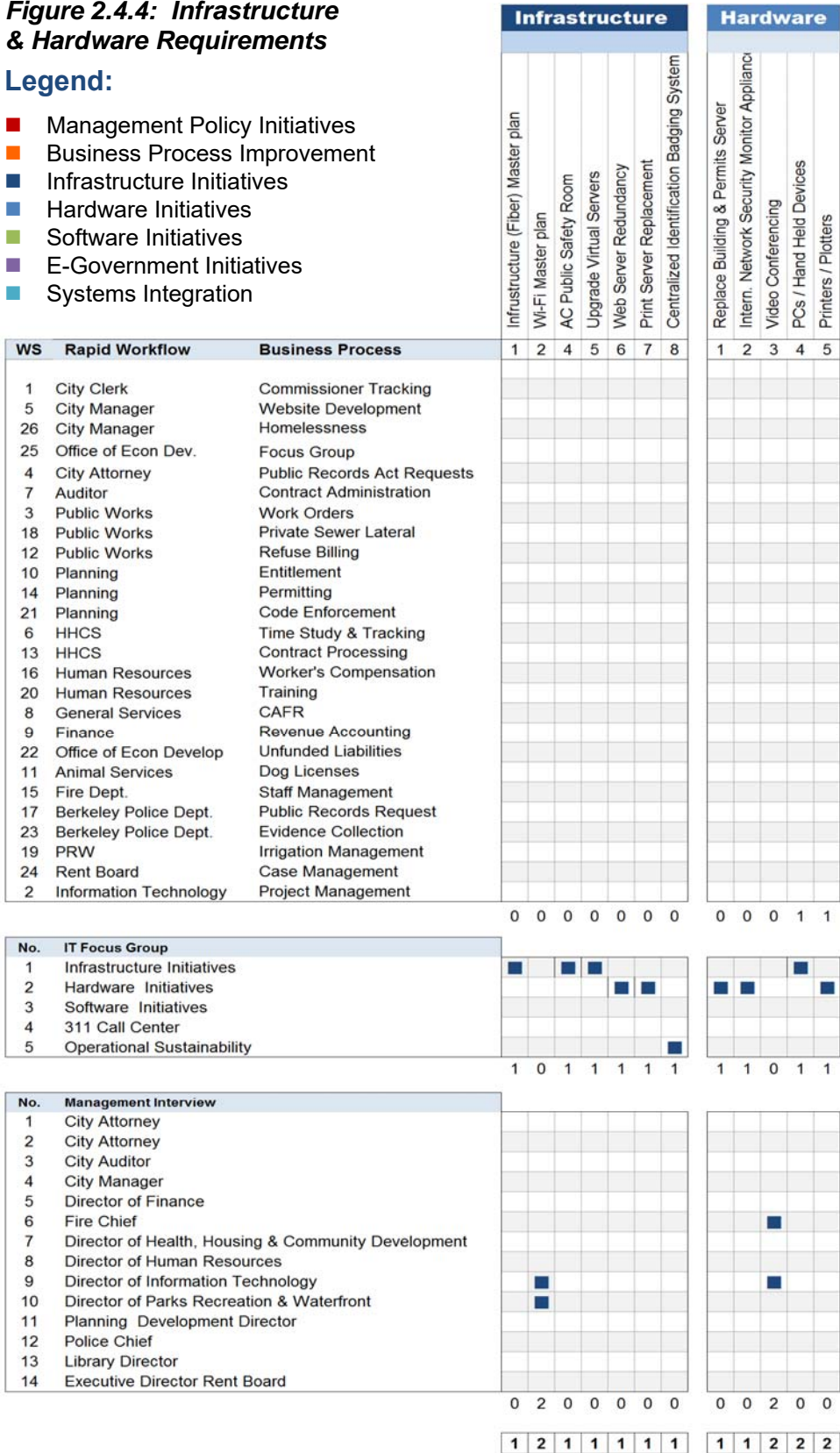




Figure 2.4.5: Departmental Software Requirements

Legend:

- Management Policy Initiatives
- Business Process Improvement
- Infrastructure Initiatives
- Hardware Initiatives
- Software Initiatives
- E-Government Initiatives
- Systems Integration

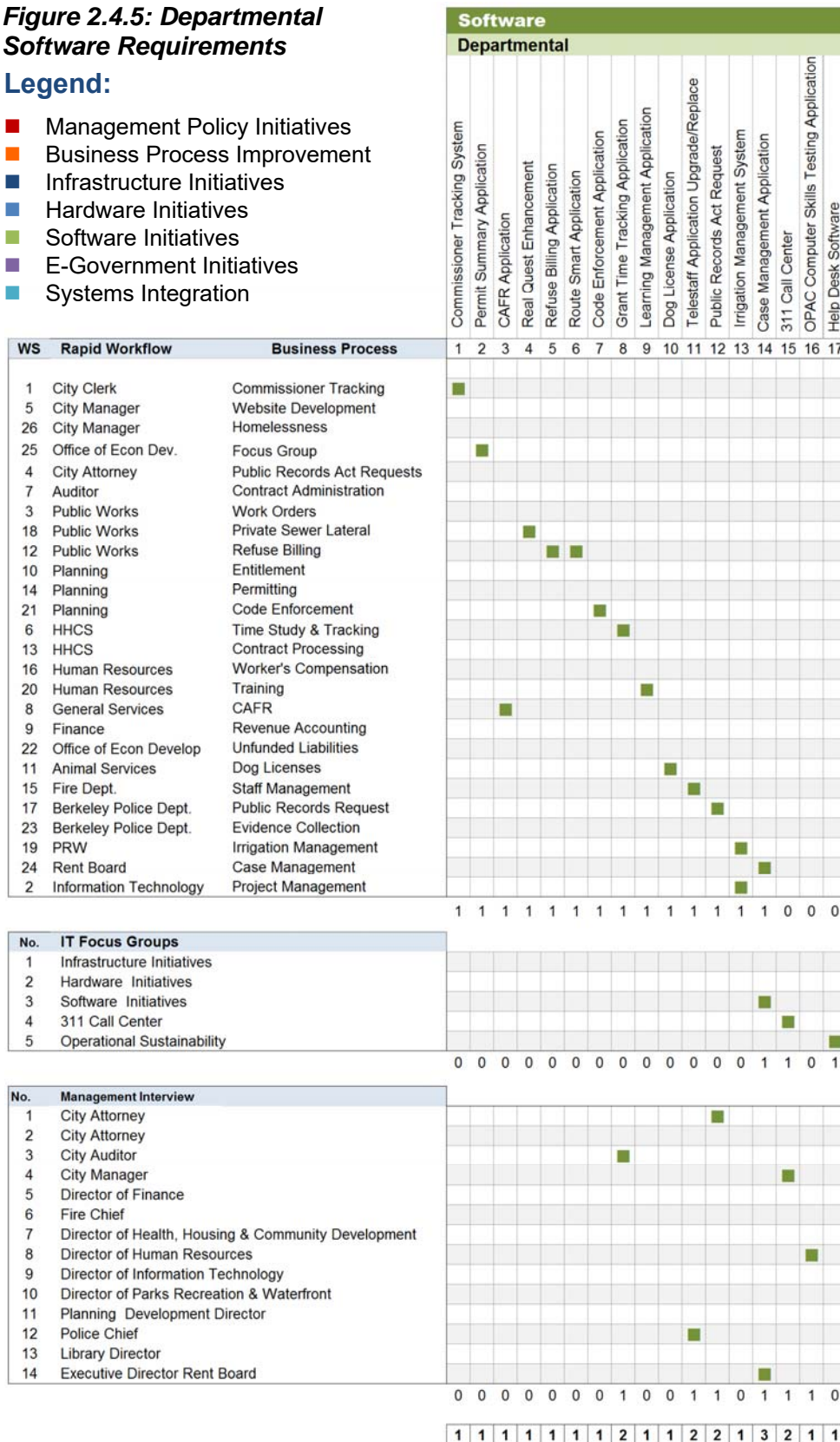
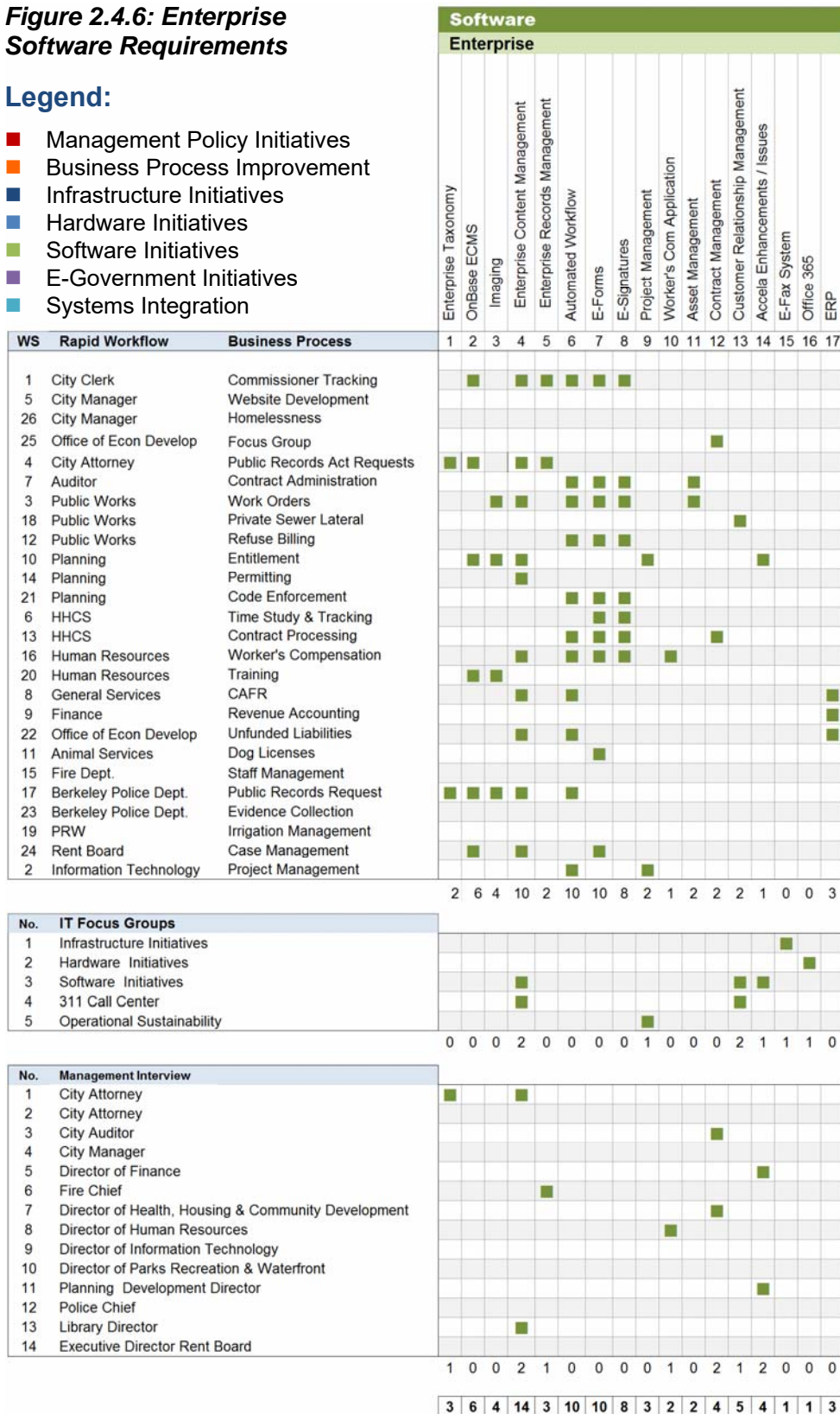




Figure 2.4.6: Enterprise Software Requirements

Legend:

- Management Policy Initiatives
- Business Process Improvement
- Infrastructure Initiatives
- Hardware Initiatives
- Software Initiatives
- E-Government Initiatives
- Systems Integration



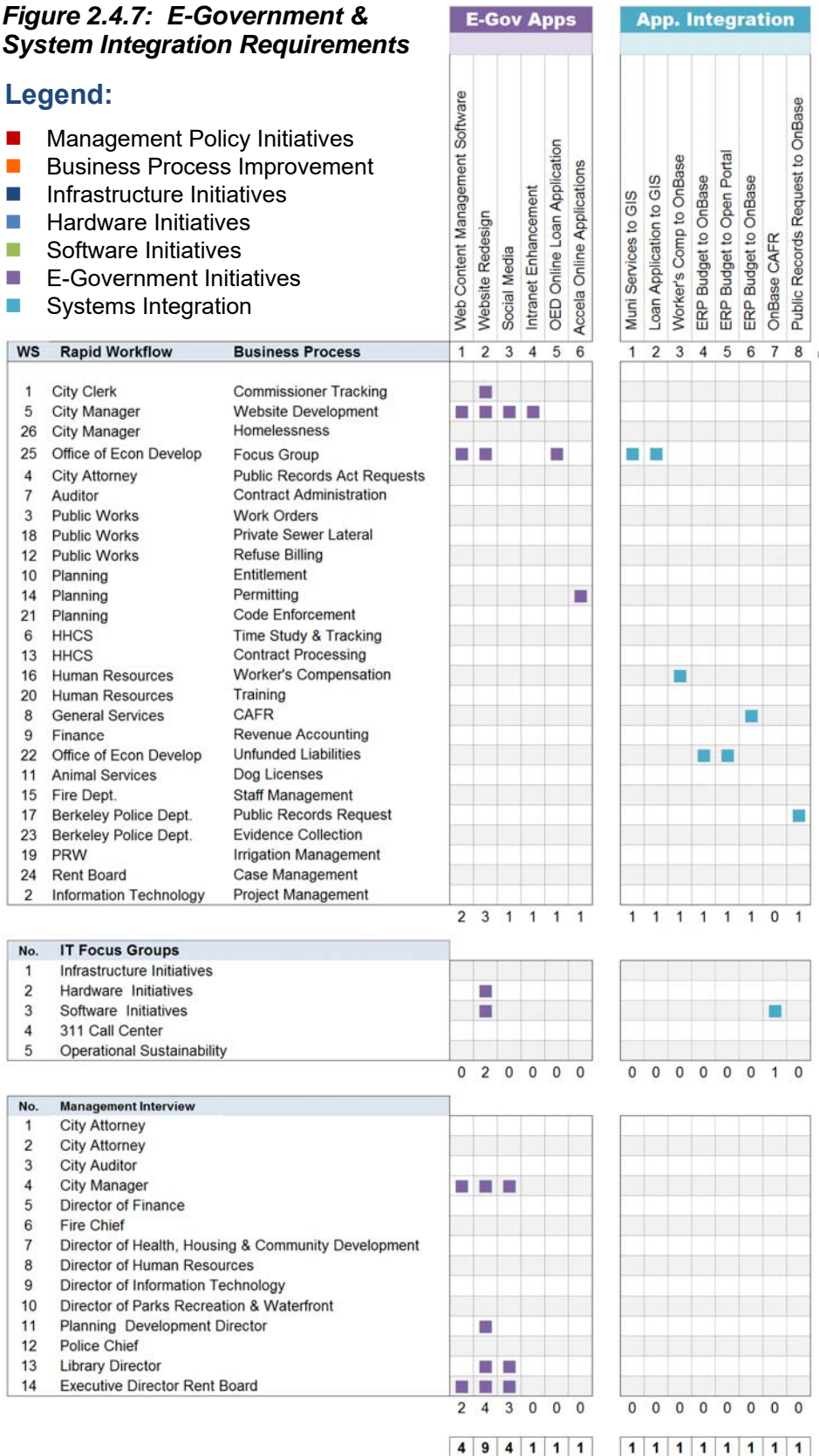


Findings and Recommendations

Figure 2.4.7: E-Government & System Integration Requirements

Legend:

- Management Policy Initiatives
- Business Process Improvement
- Infrastructure Initiatives
- Hardware Initiatives
- Software Initiatives
- E-Government Initiatives
- Systems Integration





Section 3

Digital Strategic Plan Recommendations

3.1 Introduction to DSP Recommendations

The following pages provide the findings and recommendations for the City of Berkeley's DSP Roadmap. This document reflects the City's input, IT industry best practices, and ThirdWave's 29 years of experience in this arena.

This section of the DSP includes a description of technology initiatives reflecting input provided in all phases of the project.



It is important to note **that not all solutions identified** in Section 2.5 Leading Technology Requirements (Figure 2.5.1: Technology Initiatives Identified (Not Prioritized), Figure 2.5.3: Management Policies & Process Improvements; 2.5.4: Infrastructure & Hardware Requirements, Figure 2.5.5: Departmental Software Requirements, and Figure 2.5.6 Enterprise Software Requirements; Figure 2.5.7: E-Government Requirements) were included in the final recommendations shown in the following pages.

The figures noted above captured solutions discussed in various discovery/requirements activities. The fact that a solution was mentioned by City staff in a requirements definition task does not automatically constitute a recommended technology. The following DSP Roadmap initiatives do not include those that lacked a compelling business case or sufficient justification. Therefore, there is not a one-to-one relationship with items in the figures listed above and recommended solutions in the following pages.

The City can use this document as a reference document and revisit all identified solutions in the future.

3.2 Digital Strategic Plan Roadmap Initiatives

This section provides an overall view of IT solutions identified in various tasks of the DSP Roadmap project, including on-line surveys, focus groups with IT staff, and Rapid Workflow® workshops with stakeholders.

3.2.1 Technology Recommendations

The following enterprise-wide technology recommendations are based on all phases of discovery and requirements definition of the DSP Roadmap project. (The number in parenthesis indicates the number of times an initiative was noted in a Rapid Workflow® workshop.) Moreover, ThirdWave synthesized staff input and industry best practices, as appropriate, for the City's organizational and technological situation and culture.



The findings identified here relate to technology issues; but in some cases, operational and management issues are also referenced in these findings where they relate specifically to technology recommendations.

I Infrastructure

The Roadmap project assessed various infrastructure, networking, and communications technologies. Various IT operational opportunities were also assessed as part of the project. Our findings and recommendations on infrastructure issues are provided below.

I 1 Networks/Communications

I 1.1 Infrastructure Master Plan

Findings:

The IT Focus Groups revealed that City-owned Fiber between downtown buildings needs replacement

According to City staff, this results in the following:

- Aging fiber could result in network latency.
- Aging fiber is less stable and more prone to breaking.

Recommendations:

- Carry out a Fiber Infrastructure Master Plan.
- Issue a Request for Proposal for enhancing the City's fiber.
- Upgrade City-owned fiber.



Benefits:

- Improved speed, i.e., 10 GB instead of 2 GB.
- Improved customer service.
- Allow the use of emerging technologies that require more bandwidth.
- Support the new technologies identified in the Digital Strategic Plan.

I 1.2 Wi-Fi Master Plan

Findings:

- The management interviews revealed the need for reliable Wi-Fi at the Marina.

According to City IT staff, this results in the following:

- Limited convenience to residents and tourist to the City's Marina.
- A poor perception of the City as many leading cities are providing free Wi-Fi in their public spaces.

Recommendations:

- Carry out a Wi-Fi Master Plan to address the City's wireless needs, i.e., implement high-speed Wi-Fi at the Marina where there is a high concentration of people.
- Provide carrier grade, commercial Wi-Fi, in addition to multiple transmitters (access points) to produce a mesh network, as required to provide sufficient coverage.

Benefits:

- Convenience of Internet access for residents and tourists visiting the Marina.
- Ability to target messaging to Marina visitors to encourage repeat visits.
- Highly accurate traffic monitoring
- Constituents could download information about the City of Berkeley, e.g., maps, schedules, and tourist information.
- Gather visitor information to assist with budgeting and resource allocation.
- Potential to generate additional revenue or support operating costs through public/private partnerships.

I 1.3 Citywide Fax

Findings:

The IT Focus Groups revealed Citywide Fax Issues.

According to City IT staff, this results in the following:

- Intermittent issues sending and receiving faxes in multiple locations
- Interruption of daily operations for certain business groups
- Difficult to integrate legacy Fax machine hardware with VoIP phone system

Recommendations:

- Adopt a secondary, stand-alone fax system.
- Explore e-Fax options for sending and receiving faxes.

Benefits:

- Stability of our Citywide fax solution.
- Reduced administration time.



- Improved customer service.

I 1.4 Uninterruptable Power Supply

Findings:

The IT Focus Groups revealed that the Uninterrupted Power Supplies (UPS) that support network equipment Citywide needs to be upgraded to support longer outage times. UPS are not part of the existing equipment replacement program.

According to City staff, this results in the following:

- Downtime at remote sites due to Power Outages.
- Electrical Spikes could damage network equipment.
- Cost of replacing damaged network equipment due to UPS failure.
- Aging UPS equipment can become a fire hazard.

Recommendations:

- Replace UPS, 40% of 40 – 50 units.
- Assess the best approach for replacing the existing UPS.
- Install generators in facilities that do not have UPS.

Benefits:

- Redundancy.
- Improved stability.
- Peace of mind.
- Improved safety.
- Improved business continuity.
- Save money in hardware replacements.

I 1.5 AC Public Safety Room

Findings:

The IT Focus Groups revealed that there is a lack of redundant HVAC in Public Safety Server Room.

According to City staff, this results in the following:

- Potential downtime for the 911 Communications Center
- Risk of damaging server and network equipment due to high temperatures
- Overtime staff costs for IT and Public Works staff.
- Staff stress.

Recommendations:

- Install a redundant AC Unit on the Roof of the Public Safety Building
- Install a redundant rack-mounted AC unit in the PSB Server Room
- Revise the existing SLA and support contract with the HVAC vendor

Benefits:

- Reduction of server room downtime due to temperature increases
- Improved customer satisfaction
- Reduced staff stress



I 1.6 Upgrade Virtual Servers

Findings:

The IT Focus Groups revealed the slow performance and response time of the City’s Virtual Servers, in particular, the SQL Servers.

According to City staff, this results in the following:

- Customer dissatisfaction.
- Inability to conduct day to day operations.
- Lost IT staff time researching and trying to find the solution.
- Lost staff time due to waiting for applications to respond (for instance: database queries).

Recommendations:

- Purchase higher performing backend storage to support the virtual server environment (15K drives or flash storage)
- Review the SQL configuration of the clusters, database sizing and balancing.

Benefits:

- Improved customer service.
- Enhanced system performance.

HW Hardware: Servers, Desktops, Mobile Devices, Peripherals

HW 1 Web Server Redundancy

Findings:

The IT Focus Groups revealed the lack of Web Server Redundancy.

According to City staff, this results in the following:

- Risk of website downtime due to hardware failure
- Need for scheduled downtime to perform hardware/software updates
- Intermittent interruption of access to online City services
- Loss of credibility with our customers

Recommendations:

- Implement redundant web services (in-house or contracted out, or both).
- Offsite hosting of City website to provide redundancy
- Upgrade City Website to a newer platform

Benefits:

- Increased customer satisfaction.
- Redundancy, reduced down time or no down time.



HW 2 Print Server Replacement

Findings:

The IT Focus Groups revealed that the Print Server is crashing, resulting in having to restore from backups.

According to City staff, this results in the following:

- Makes network printing unavailable to the entire City.
- Staff time to troubleshoot and restore print server.

Recommendations:

- Carry out a technical assessment and isolate the cause, purchase a new print server if required.
- Reconfigure printers to direct IP printers, managed by Active Directory Group Policy, and use the print server to host printer drivers.

Benefits:

- Improved stability and uptime of the print server.
- Less troubleshooting time for IT staff

HW 3 Office 2013 Apps / Office 360

Findings:

The IT Focus Groups revealed that Office 2013 Applications are freezing and crashing.

According to City staff, this results in the following:

- Daily productivity impacts for staff (e.g., in Word and Outlook)
- High call volume to the Help Desk
- Customer dis-satisfaction

Recommendations:

- Training for staff and IT staff on trouble shooting.
- Explore migrating to Office 365.
- Improve shared knowledge in the IT Department for system solutions; a better way of communicating and reporting issues and fixes.

Benefits:

- Improved productivity and customer satisfaction.
- O365 will enable redundancy and services, reducing downtime and improving productivity.
- O365 will enable access to documents in case of emergency via web and drop box.
- More training would improve the social capital.



HW 4 PCs / Hand Held Devices

Findings:

A review of a PC and mobile device inventory revealed the following:

	PCs / Hand Held Devices	Manufacturer	Qty.	Yr. Purchased
1	Desktop PCs / OS	Dell	1,164	
2	Desktop PCs / OS	Apple	13	
3	Notebook Computers / OS	Compaq	2	
4	Notebook Computers / OS	Dell	202	
5	Notebook Computers / OS	Gateway	22	
6	Notebook Computers / OS	Hewlett Packard	1	
7	Notebook Computers / OS	Lenovo	13	
8	Notebook Computers / OS	Panasonic	97	
9	Tablets / OS	Apple	60	
10	Tablets / OS	Data 911	43	
11	Tablets / OS	Dell	5	
12	Tablets / OS	Lenovo	4	
13	Tablets / OS	Microsoft	9	
14	Tablets / OS	Panasonic	7	
15	Smart Phones	Apple	247	
16	Smart Phones	Samsung	2	
17	Public Safety Laptop Computers / OS	Panasonic	87	
18	Public Safety Laptop Computers / OS	Data911	53	
19	Public Kiosks /OS	Dell	51	
20	Public Workstations / OS	Microsoft	4	
		Total	2,086	

As indicated in the table above, the City owns 2,086 PCs and hand held devices. These include desktops, notebooks, tablets, smart phones, public safety computers, public kiosks and public workstations. There are 10 different vendors supplying devices to the city. They include Dell, Apple, Compaq, Gateway, Hewlett Packard, Lenovo, Panasonic, Data 911, Microsoft, and Samsung. With the City’s approximately 1,500 employees the ratio of devices to employees is 1.39 to 1.

The findings result in the following conclusions:

- There are too many device vendors to provide timely and cost effective logistics, support and maintenance.
- Many field workers such as maintenance folks do not require a computing device so the ratio of devices is skewed but illustrates the abundance of computing power.
- Special requirements dictate certain devices, as with police and fire laptops.



Recommendations:

- Replace old end of life devices if possible.
- Classify devices narrowing down the types as much as possible.
- Evaluate the different functions and services of the City to determine appropriate systems.
- Narrow down the number of vendors providing devices to the City.
- Create a catalog for departments to order from.

Benefits:

- Increased savings in operations, support, and maintenance costs.
- City wide standards will simplify systems support and end user training.

HW 5 Printers / Plotters

Findings:

A review of a PC and mobile device inventory revealed the following:

	Printers / Plotters	Manufacturer	Qty.	Yr Purchased
1	Network Printer	HP	298	
2	Network Printer	Lexmark	1	
3	Network Printer/Small Format Scanner	Toshiba	74	
4	Network Printer	Ricoh	1	
5	Local Printers	HP	60	
6	Local Printers	Brother	3	
7	Local Printers	Canon	1	
8	Local Printers	Epson	1	
9	Local Label Printers	Dymo	65	
10	Local Label Printers	Graphic Production	1	
11	Local Barcode Printer	Zdesigner	8	
12	Local Dot Matrix Printers	Okidata	2	
13	Plotters - Large Format	Graphtec	1	
14	Plotters - Large Format	Tapco	1	
15	Plotters - Large Format	Canon	2	
		Total	519	

As indicated in the table above, the City owns 519 printers and plotters. These include network printers, local printers, local label printers, local barcode printers, local dot matrix printers, local receipt printers, and large format plotters. There are 15 different vendors supplying printing devices to the City. They include HP, Lexmark, Toshiba, Ricoh, Brother, Canon, Epson, Dymo, Graphic Production, Zdesigner, Okidata, Graphtec, Tapco, and Canon.

The findings result in the following:

- Printing is one of the largest ongoing IT operation expenses an organization incurs. Compound it with multiple approaches to printing and multiple vendors and costs increase. **The City's current ratio of employees to printing devices is 3 to 1.** Current best practices state the ratio should be around 6 to 1. Based on this metric, the City has too



many printing devices and vendors to provide timely and cost effective logistics, support and maintenance.

Recommendations:

- Replace old end of life devices in a planned refresh program.
- Classify devices narrowing down the types as much as possible.
- Evaluate the different functions and services of the City to determine if and where a standard device will work.
- Narrow down the number of vendors providing printing devices to the City.
- Strive for the highest possible ratio of employees to printers, including the use of networked printers.
- Create a catalog for departments to order from.

Benefits:

- Increase savings in operations, support, and maintenance costs.
- City wide standards, which will optimize City IT staff resources.

D SW Software: Departmental

Departmental software are applications meeting specific or unique internal department functionality. For instance, a Library would be the only department in a city requiring a Library Information Management System (LIMS). In general, municipalities tend to have a decentralized approach to the procurement and deployment of departmental application software, which is often predicated by the municipal budget process. The lack of an enterprise approach typically results in disparate departmental information systems, and various home grown, stand-alone “shadow” systems that are usually unsupported, one-off applications.

The following departmental applications were identified in the course of the project; their selection and implementation should all go through detailed business, technical and functional specifications development and benchmarking to evaluate and procure the most responsive and cost effective solutions.

D SW 1 City Clerk Commissioner Tracking System [1]

Findings:

The City Clerk Commissioner Tracking Rapid Workflow[®] workshop revealed a number of challenges:

- The Commissioner Tracking process has a level of complexity with specific legal requirements. This process employs a homegrown Access database application referred to as CIS. A number of challenges were identified by stakeholders involved in this process:
- CIS shortcomings:
 - CIS is unreliable (as is Ektron, the current Web Content Management application used at the City).
 - Limited ability to run and create reports in CIS.
 - Inability to effectively track the complexity of an individual's requirements and the relationships of multiple appointments and history such as: Form 700, Affidavit of Residency, ethics training, officer training, number of terminations and reasons for termination.



- Inability to effectively and efficiently track the recorded filing requirements.
- Limited IT staff support for CIS.
- A wide range of technological competence (commissioner specific).
- The use of both electronic and hardcopy documents.
- Inability to convey legal requirements to staff and public.

According to City staff, this results in the following:

- Technical impacts of CIS:
 - CIS is inefficient and requires considerable staff time.
 - Requires keeping some documents in hardcopy.
 - Limits the ability to implement efficiencies in technology.
 - Cannot link documents to files.
 - Is time consuming/ confusing and can lead to mistakes/errors.
 - Creates more work to double/triple check.
 - Application failures and loss of data, which has to be repopulated (5-15 min/day). If the application experiences a total failure, the loss of data would be catastrophic to all boards and commissions processes.
 - Allows only one staff member to work on the application at a time.
 - Staff are unable to track some pieces in the database.
 - Creates more manual work in producing current reports on a weekly basis.
 - Have to send letters to commissioners.
 - If additions/changes are needed, the database is not easily adaptable.
 - Concerns that required information may not be in CIS.
- The failure to follow legal requirements can lead to improper terminations.
- Access is not the most secure data base.
- There is a negative perception of the public/Council.
- Staff rework.
- Can't enforce properly or timely.

Recommendations:

- Implement a new Commissioner Tracking System (CTS). Explore if this application can be provided by the new Enterprise Resource Planning application currently being procured, or purchase a departmental application.

Features/Functions:

- Reliable application
- Employ SQL as the database.
- E-forms
- E Signatures
- Automated workflow
- Accept electronic documents
- Web enabled
- Tracking complexity
- Tracking activities
- Legal requirements (role base, alerts, rules)
- Relationship of a single commissioner with multiple appointments that have differing requirements



Reports:

- Form 700 tracking
- Oath of Office
- Biyearly Term Limit
- Roster, by Commission
- Internal/External Roster
- Vacancy by Commission
- Annual 700 Report
- Letter Generator
- Officer Training
- Ethics Training
- Affidavit of Residency
- Reappointment limitations including outstanding Form 700s, maximum number of terminations, break in service requirement.

Interfaces:

- OnBase
- Net File
- Outlook and MS Office (needed a license)
- Ektron

Benefits:

- Improved staff efficiency.
- Enhanced accuracy and accountability.
- Better communication.
- Improved reporting.
- Business process improvement and streamlining.
- Improved public perception.
- Staff time savings.
- Improved efficiency, accuracy and accountability.
- Eliminate use of Excel.
- Ability to expand usage.
- Increased public access to documents.
- Improved efficiency, accuracy, and public perception.
- Easy to find information and answers related to commissions,
- Less demand on IT resources.
- IT improved software support.

D SW 2 Office of Economic Development Permit Summary Application [25]

Findings:

The Office of Economic Development (OED) Rapid Workflow® workshop revealed that the Office is not informed when business licenses, building permits, or planning permit applications are issued by other departments.

According to City staff, this results in the following:

- Projects may get to a certain point before Office of Economic Development can provide services.
- Business activity is a key metric, and not knowing makes OED less effective.



Recommendations:

- Provide automated summaries to OED by permit types from each system issuing the permits.
- Provide an ability to contact businesses and welcome them to Berkeley.
- Provide an ability to provide virtual customer service counter with information on various permits and fees required to open a business in Berkeley
- Alternative solution to “Locate in Berkeley” Application

Benefits:

- Save time of OED staff.
- Improve customer service, which allows being proactive.

D SW 3 General Services Department CAFR Applications [8]

Findings:

The General Services Department Comprehensive Annual Financial Report (CAFR) Rapid Workflow® workshop revealed numerous challenges with the process:

- The process is a manual process.
- Financial software, FUND\$, cannot handle the Governmental Accounting Standards Board (GASB) requirement changes, which have to be done in Excel.
- Document management is a manual process.
- For time preparers, information needs to be prepared in a certain amount of time. The CAFR process is carried out at the same time as the audit process.
- Having to produce data in FUND\$ and export and format it in Excel.

According to City staff, this results in the following:

- Staff time, the current process is inefficient.
- Prone to human errors, sometimes staff forget to make changes.
- Have to do extra work, generate reports out of FUND\$ then put that data in Excel and prepare the statements out of Excel.
- Potential for human error, deleting or misnaming files.
- May not produce the high quality product staff would like to produce.

Recommendations:

- Implement a CAFR Extended Reporting Application. (This capability might be available in the Enterprise Resource Planning system the City is currently in the process of procuring.)

Features/Functions:

Provide the following minimum functionality:

- Automated data migration and population from FUND\$ (or new ERP) to different sections of CAFR.
- Produce the CAFR.
- Provide workflow automation.
- Export reconciled data formatted per the CAFR requirements.
- Update the software on an ongoing basis as GASB requirements change.
- Work in conjunction with (or is part of) the new ERP system.



Reports:

- Single Audit Report
- Grant Reports
- IDC Report
- State Controller Report

Interfaces:

- FUND\$ or new ERP System
- OnBase Enterprise Content Management System
- Business Intelligence tool

Benefits:

- Save staff time.
- Improve the coordination between Accounting and City departments.
- Allow staff to focus on other important projects simultaneously, e.g., external audit.
- Improve the overall quality of the finance system.

D SW 4 Public Works RealQuest Enhancements [18]

Findings:

The Public Works Private Sewer Lateral Rapid Workflow® workshop revealed that RealQuest does not have phone numbers for property owners. According to City staff, this results in:

- The inability to find property owners.
- The work does not get done.

Recommendations:

- Explore if RealQuest can provide phone numbers.
- Have RealQuest data uploaded more frequently.
- Establish one customer database.

Benefits:

- Improved staff efficiency will improve staff time savings.
- More work will be done.

D SW 5 Public Works Refuse Billing Application [12]

Findings:

The Public Works Refuse Billing Rapid Workflow® workshop revealed that the process has numerous challenges:

- Accurately identifying the service location.
- Not getting reports with useful data for decision making.
- Lack of baseline standards for customer start of service.
- Lack of a sufficient level of detail in the billing statements: e.g., correct quantity of service level and service dates.
- Route books lack appropriate information.
- The Truck report is a manual process, labor intensive and truck reports lack real time information.
- Inefficient process in closing cart delivery Lagan cases.
- Lack of handheld devices for field staff.



- Lack of real time communication between crews, 311 Customer Service and Zero Waste Management.
- The inappropriate use of a Customer Relationship Management system (Lagan) as a Work Order system.
- Start Service is sometimes sent to Zero Waste Management in error instead of going to Revenue Collection for account set up.
- Lack of integration between Lagan, Route Smart and FUND\$.
- The use of a land-based application to bill for refuse service, e.g., the County billing by parcel. The County's system can show an account as commercial, but is could be residential.
- There is no account receivable reconciliation report that end uses can run.
- Lack of staff resources.
- Lack of technology: GPS, payroll, and tools to communicate with customer.
- Lack of equipment throughout the Zero Waste division.
- Quite a few of these activities are paper based.

According to City staff, this results in the following:

- Inefficient service delivery.
- Insufficient Operational Data
- Cost impacts.
- Customers could over pay or under pay.
- Requires bill adjustments.
- Generates customer questions.
- Missed pick-ups.
- Inefficient operational procedure.
- Could impact billing.
- Missing tasks.
- Customers could be billed an inaccurate rate.
- Makes it difficult to analyze revenue collections.
- Impacts budgeting.
- Increased operational costs.
- Staff burn out and low staff morale.
- The cost of working in hardcopy, e.g., paper, toner, copier, space, and staff time.

Recommendations:

- Implement a Refuse Billing Application.
Features/Functions:
 - Explore replacing Refuse Billing Application.
 - Identify service location vs. billing location.
 - Provide a bill with sufficient detail.
 - Provide Automated Workflow.
 - E-forms.
 - Web enabled application.
 - Support mobile devices
 - Communication with the public via social media tools.
 - Provide customer access to their accounts over the web.
 - Ensure all the right questions are asked of customer up front.



- Ensure that information gets into the right system.
- Provide Auto Payments
- Provide an online portal for the public to submit requests

Interfaces:

- Route Smart
- CRM
- GIS
- ERP
- County System
- 3rd party billers

Reports:

- By service location.
- Commercial customer service level and type.
- State report.
- Recycling report.
- Diversion.
- Billing schedules.
- Accounts Receivable reports.
- Ad Hoc reports.
- Route reporting
- By work order type, department, queue (allocation), requestor, and work order handler
- Multi-sort (sort by multiple columns)

Benefits:

- Improved business processes.
- Better reports with useful information for decision making.
- Improved customer service.
- Reduced calls to the Customer Service Center.
- Satisfied customers.
- Reduced staff time for multiple departments,
- Improved route optimization.
- More efficient operation.
- Improved customer service and billing.
- Improved the budget procedure.
- Improved staff morale.
- Reduced processing cost by reducing overtime.
- Improved service level.
- Reduced operating expense.
- Improved performance and morale.
- Reduced truck maintenance.



D SW 6 Public Works Route Smart Application [12]

Findings:

The Public Works Route Smart if service Rapid Workflow® workshop revealed that truck reports lack real time information.

According to City staff, this results in the following:

- Inefficient work process.
- Delays getting back to the customer.
- A negative impact on billing.

Recommendations:

- Implement Route Smart Navigator software module.

Benefits:

- Improved business processes.
- Better reports with useful information for decision making.
- Improved route optimization.

D SW 7 Planning Department Code Enforcement Application [21]

Findings:

The Planning Department Code Enforcement Rapid Workflow® workshop revealed a number of challenges:

- Overlap with traffic engineering, and do not know their policies. (Parks.)
- Lagan does not decipher which section of the Department to send service requests. (Parks)
- There is no Work Order System for this process.
- There is decentralized enforcement.
- The lack of data: i.e. cases in the City.
- The lack of a tracking system.
- It is difficult finding addresses for the owner of the record.
- Data in this process cannot be shared across Departments.
- The lack of workflow automation.
- The existing process is time consuming
- Cost of enforcement is not included in the fee analysis.

According to City staff, this results in the following:

- Cannot properly write the violation notes.
- It takes a lot longer to get addresses.
- Lost staff time and productivity.
- The request gets bounced around.
- Reduced effectiveness.
- It is redundant, confusing, and inefficient.
- It is confusing to customers and decreases productivity.
- They cannot establish a nexus between enforcement levels, and lose track of big violations.



- Inconsistencies.
- Requires the use of disparate tracking systems.
- Returned mail.
- The lack of enforcement.
- Can take a month to go from violation to Notice of Violation and can be doing redundant research; thus, increasing costs.
- The lack of funding for code enforcement.

Recommendations:

- Implement a new Code Enforcement Application:

Features/Functions

- Easy access to information.
- Enterprise municipal coordinates.
- Automated Workflow.
- Issue automatic reminders
- Issue automatic notifications.
- E-Forms.
- E-signatures.
- Web-Enabled.
- Support mobile devices.
- Simple G.U.I. (Graphical User Interface)
- Provide the public the ability to enter their complaints online and check its status.
- Adopt one central enterprise database application.
- Ad Hoc reporting for non-IT staff.
- Share Contact Manager.
- Track communications with the violator (email) saved.
- Ability to manage photos.
- Time tracking.
- Have all data on citation show up on screen.
- Flags parcel, so other permitting activities would know there is an outstanding violation.
- Role-based Training.
- Case history.

Reports: Provide the following minimum reporting capabilities:

- Outstanding enforcements
- Multiple violations
- Type of violations
- Staff hours/funding spent
- Case history and workflow

Benefits:

- It helps Parks and Public Works close out the citation cycle.
- Staff time savings.
- Increased productivity.
- Quality improvement.
- Improved public perception as City policies get implemented.
- Improved productivity.
- Returned-mail costs savings.



- Business Process Improvement.

D SW 8 Health, Housing & Community Services Grant Time Tracking Application [6]

Findings:

The Health, Housing & Community Services (HHCS) Rapid Workflow® workshop revealed a number of challenges with grant time tracking:

- General Ledger (GL) does not match the time tracking tools.
- There is a heavy reliance on hard copy that has to be routed, reviewed, and signed.
- There are a number of parallel systems that are disconnected.
- Information is hidden, i.e., staff distribution. Supervisors may not know it, and it is not easy to find out.
- Filing hard copy timesheets, reviewing documents, i.e., Leave Slips and Functional Timesheets.
- Dependence on staff knowledge and staff turnover; a new person may not know the next steps. The existing process is staff dependent.

According to City staff, this results in the following:

- Audit findings.
- Possible loss of revenue.
- Staff time; trying to get, communicate, and fix them.
- Huge use of staff time versus spending time on serving the community.
- Are paying staff to drive from remote satellite sites to the City.
 - Inefficiencies of documents being lost or misrouted.
 - Reporting/essential grant management is difficult and error prone.
 - Gives staff permission to not be engaged.
 - Staff frustration.
 - All of this takes a lot of time; staff begin to predict time/activities, which results in more inaccurate timesheets and corrections.
 - Space.
 - Time to file.
 - Pulling documents for audits.
 - Have to physically make copies or scans.
 - Disconnect of paper and data in systems, difficulty of keeping time data consistent.
 - When a Subject Matter Experts leaves the City, new staff has to figure it all out again, which is difficult.

Recommendations:

- Implement a Grant Time Tracking Application:

Features/Functions:

- Tracks time by activity across all programs, as defined by each program.
- The GL would be informed by this application.
- Provide ability to extract data in order to be in compliance with grant requirements.
- User friendly for staff and supervisors; should be able to review and reconcile staff activities in the system.
- Provide workflow automation.
- Replace all existing time tracking tools. WIC, TCM, MCAH, CHDP, PHEP, NEOP, CLPP, MAA, Title V, Purple timesheet and the HHCS functional time card.
- E-Signature.



- Enterprise systems that are configurable to programmatic and grant funding source.
- Support mobile services.
- Information and data is secure and retrievable for audit purposes (backed up at a Disaster recovery site.)

Reports:

- Billing to grants.
- Billing by staff in terms of hours by grant versus project vs City work.
- Reports of staff by activity.
- Ability to run reports at any point in time.
- Selective report period: monthly, quarterly, yearly.
- Dashboard.
- Adjustments and HHCS.
- Invoices to grant funding sources.

Interfaces:

- Payroll
- GL
- Persimmony (new application to track client data)
- Nexgen (Practice management health records)

Benefits:

- Decreased audit vulnerability.
- More staff time to provide services.
- Improved staff morale.
- More staff time available for high value work.
- Contribute to green environmental sustainability.
- Improved consistency.
- Make it easy to train and provide cross coverage.
- Staff time savings.
- More accurate invoicing.
- Supervisor accountability.
- Accessible data.
- Space savings.

D SW 9 Human Resources Learning Management Application [20]

Findings:

The Human Resources training/certification Rapid Workflow® workshop revealed a number of challenges:

- Cannot keep track of who took training and when training must be renewed.
- Management/Supervisors do not know when employee certifications are about to expire.
- Management/Supervisors do not know what training/certifications are required.
- The current tacking of training/certifications is done manually for all City departments except for one.
- It is difficult getting employees to show up and get certifications, even when it is required for their job.
- It is difficult keeping track of new hires and terminated employees.
- A lot of employees are in the field without access to computers.



According to City staff, this results in the following:

- There is a loss of revenue.
- Departments can fall behind, and the work backs up.
- The loss of services due to not being able to perform work if not licensed, i.e. nurses, Refuse Department staff.
- The impacts in service delivery to the public, which could result in complaints, and calls to 311 and the City Manager.
- The City is subject to liability for staff doing work they are not certified or qualified to perform.
- Waste of training funds.
- Field staff may not show up for training.
- Manual tracking takes too much time.
- Takes away from performing other job functions.
- The lack of automation makes information unavailable to all departments.

Recommendations:

- Implement an Enterprise Learning Management Application:

Features/Functions:

- Track participants in all departments.
- Provide electronic sign-in sheets.
- Provide an electronic roster.
- Track all classifications.
- Track due dates.
- Track renewal dates.
- Provide access by department managers, supervisors, directors, and employees via web access.
- Allow staff to sign up for training.
- Provide approval feature.
- Provide notifications/alerts to employees, supervisors, and managers.
- Ability to store training materials.
- Web enabled application.
- Support mobile devices.

Reports: Provide the following minimum reporting capabilities:

- Enrollment by type of training
- DMV Pull Notice Program
- Required training by:
 - Type
 - Class
 - Certification
 - License
 - Departments

Interfaces: The proposed system should interface with the following:

- New ERP
- DMV
- HR VTA
- NeoGov



Benefits:

- More efficient tracking to ensure employees are compliant.
- Allow departments to function better.
- Supervisors could notify employees if they are not in compliance.
- More employees would be trained.
- Compliancy limits financial/illegal exposure.
- Ensure that all staff that are required to be trained are trained.
- Staff time saving for Human Resources, and departments in general.
- This will benefit all departments that have training/certification requirements, including:
 - Public works
 - Legal
 - HHCS
 - Police
 - Library
 - Fire
 - Parks
 - PRW
 - Planning
 - Public

D SW 10 Animal Services Dog License Application [11]

Findings:

The Animal Services dog license Rapid Workflow® workshop revealed a number of challenges with the dog licensing process:

- Duplicate data entry in two systems: Chameleon and FUND\$.
- FUND\$ has outdated animal information.
- Renewal letters are sent out on deceased animals.
- There is a lack of integration between FUND\$ and Chameleon.
- For Animal Services, customers have to come in person. (Dog tags issued by Finance do not require that the customer come in, they are mailed to them.)

According to City staff, this results in the following:

- It takes too much time for staff, which equates to staff costs.
- Takes staff away from high value work.
- If staff forget to update FUND\$, it impacts customers' dissatisfaction, creates erroneous penalties on a bill, and takes time to resolve.
- Bill to a deceased animal.
- Can result in duplication of accounts.
- It waste customer's time, or creates an inconvenience.

Recommendations:

- Integrate FUND\$/new ERP with Chameleon.
- Consider a policy change: provide dog licenses exclusively at Animal Services.
- Implement Dog License Application.

Features/ Functions:

- Online access.
- E-form to collect customer/department information.
- Ability to submit attachment (PDF, JPEG, GIFs)



- Ability to make online payments.
- Ability to respond after review.
- Provide reminders and notifications.
- Automatically push appropriate data.

Benefits:

The benefits of integrating FUND\$/new ERP with Chameleon include:

- Better business control through Animal Services.
- Ability to sell other services and provide customer education.
- Real time data.
- More sensitivity to customers.
- Improved customer service.

The benefits of implementing a new Dog License application include:

- Improved customer service.
- Zero wait time.
- Ability to do up-selling of products and services.
- Improved fundraising.
- Improved convenience.

D SW 11 Fire & Police Departments Telestaff Application Upgrade/Replace [15]

Findings:

The Fire Department Rapid Workflow® workshop and the Police Department Management Interviews revealed a number of challenges with the City's timekeeping processes:

- Telestaff freezes, locking the user out.
- Telestaff hires out of sequence.
- The current software is not the up to date version.
- The current version is not supported by the vendor.
- Lack of documentation of Telestaff configuration. (Logic diagram, business rules, build/design documents)
- Not sure if all Telestaff features are being used.
- Failure to make outbound phone calls to hires.

According to City staff, this results in the following:

- Wasted staff time for hiring officers.
- Major staff frustration.
- Causes an investigation on how hiring was done.
- Calls to staff to cancel.
- Manually rehire.
- Employee could lose money.
- Inability to maintain the roster.
- Loss of efficiency, time, and money.
- Can stop/interrupt the hiring.
- When phone calls are not made, it causes mandatory hires.



Recommendations:

Explore the following options:

- Software upgrade to the current version, possible a cloud version.
- Software replacement.
- Upgrade to the enterprise version of Kronos.
- Vendor demonstrations when AIAA's are on board.
- Trouble shoot the phone lines.

Benefits:

- Staff happiness.
- Staff time savings.
- Accurate data.
- Accurate payroll records.
- No wasted time hiring.
- Improved/ actual vendor support.
- Would have resources to maintain the system and troubleshoot the system.
- Greater efficiency.
- More efficient hiring.
- Reduced loss of income for employees.

D SW 12 City Attorney Public Records Act Request [4]

Findings:

- The City Attorney Management Interview revealed the following challenges with responding to Public Records Requests. These are a few sample quotes.
 - *"They have to find and review a great deal of documents, redact them in some cases – have to rely on other staff, which are not trained in PRA requests."*
 - *Need a way to find documents, put in a format for others to review and redact as required, without doing it manually. This applies to documents in the City and stored in Livermore."*
 - Lagan, which is *"used for public records requests is very clunky."*
- The City Attorney Public Records Request Rapid Workflow[®] workshop revealed the following:
 - Staff do not consistently enter the steps in Lagan to close cases.
 - Shared drives are a challenge as it is easy to lose folders/documents, they can be moved or deleted.
 - There are no standard naming conventions, or there are inconsistent conventions.
 - Email/general backups are out of sight and out of mind, and inaccessible to everyday staff.
 - Staff do not respond in time to requests.
 - It is very difficult to find responsive documents.
 - Finding responsive documents relies on an individual's' memories.
 - Staff do not review documents for privileged information before sending them to the City Attorney.
 - Staff do not understand exemptions from PRA.
 - Not sure if staff know or think about all the public records stored in Livermore.



According to City staff, this results in the following:

- The public is not getting what they are entitled to and poses legal exposure to the City.
- Impacts public relations with constituents and community.
- Puts pressure on City Attorney staff and results in unnecessary workload.
- Staff time example - If staff have retired or are on vacation the City might not comply.
- Slow response.
- Potential non-compliance and lost documents.

Recommendations:

- Provide more staff training on the PRA process and requirements, in addition to identifying consequences when PRA requirements are not met. For instance, make checking the File Trail part of each PRA request response.
- Adopt and leverage the City's exiting OnBase System:
 - Develop and adopt a city-wide taxonomy (content management indexing standard).
 - Replace the use of shared drives with OnBase.
 - Use OnBase to help manage (store and access) the documents in this process.
 - Adopt the City Clerk's retention schedule via the OnBase Records Management software module.
 - Assign a DBA to support the OnBase Enterprise Content Management System.
 - Explore the possibility of replacing Lagan to meet the broader requirements of an enterprise PRA application meeting the needs of all departments, including the Police Department (described in the solution below).

Benefits:

- Compliance with the law.
- Reduce the City's legal risk.
- Time savings, for both City Attorney and department staff.
- Better appearance and reputation of the City.

D SW 13 Police Department Public Records Act Request [12]

Findings:

- The Police Department Public Records Request Rapid Workflow® workshop and Management Interview revealed a number of challenges with responding to Public Records Requests:
 - Looking in two different systems to locate property.
 - Looking into three systems for records.
 - Having records kept in other departments that should be kept in the Records Division.
 - Internal requests received in other work groups of the Police Department.
 - Duplicate fax requests are received internally.
 - The Blue Sheets can trigger duplication of effort by different Police Department staff.
 - Inability to run department specific reports.
 - Manually redacting documents.
 - The existing process does not support high level situational awareness.

According to City staff, this results in the following:

- Wasted time (1 hr/wk.) for Property Room staff.
- May skip over data/accuracy. Because of different ways to search in the systems.



- Staff time to research in other departments. i.e., Jail has records; so need to send them the blue form.
- Duplication of work.
- Can't account for, or justify, staffing.
- Can't accurately report to community how much time is spent.
- Staff time redacting document (4 hrs./day) by Records Staff, which is done manually.

Recommendations:

- Implement a Police Department Public Records Request Application. (Note: The City Attorney currently uses the Lagan system to meet these requirements. An option is to explore if the existing Lagan System can meet the Police Department's technical and functional requirements listed below, with the recommendations identified in that workshop.)

Features / Functions

- Adopt one system
- Provide access to all Police Department work groups
- Provide single portal for all request (internal and external)
- Web based solutions.
- Supports mobile devices.
- Automates the Blue Form.
- Provides E-distribution, notification, and delegation.
- Provides E-redaction capabilities.
- Provides a dashboard.
- De-confliction: identify if a request been submitted before.

Reports: Provide the following minimum reporting capabilities:

- Due Reports
- Overdue Reports
- Reports due by persons / Division
- Time Spent
- Reports Requestor

Interfaces: The proposed system should interface with the following:

- New World
- Outlook
- RMS – Tiburon
- THE Crimes

Benefits:

- Staff time saving.
- Improved accuracy.
- More efficient process.
- More timely response.
- Better department performance.
- Improved public access.
- Increase situational awareness and reporting capabilities.
- Could point to inefficiencies in the process, providing performance improvement.
- Cost savings.
- Decrease repetitive movement required by manually redacting numerous documents.



D SW 14 Parks, Recreation & Waterfront Irrigation Management System [19]

Findings:

- The Parks, Recreation & Waterfront water irrigation management Rapid Workflow® workshop revealed a number of challenges:
 - Inefficient use of staff time.
 - Inconsistent watering and wasting water.
 - Lack of a way to monitor volumes.
 - Lack of a centralized system.
 - The current system is unsustainable, with a high probability of failure. There are various brands of controllers currently being used.

According to City staff, this results in the following:

- Higher costs and increased operational expenses.
- Inventory degradation.
- Diminished community service and relations in terms of credibility and trust.
- Environmental impacts, e.g., run off.
- Impacts staff productivity.
- Dead plants, degradation of inventory and public safety.
- Staff time figuring out irrigation system problems.
- Staff time to make adjustments.
- Inefficiencies.
- Staff are currently making 'guesstaments.'

Recommendations:

- Implement Citywide Centralized Irrigation System.

Features/Functions:

- Automatically adjust to weather conditions.
- Problem warning system with automated notifications.
- Flow sensor detection.
- Remote programming.
- Flow consumption volume and rates.
- Preventive maintenance.
- Ability to optimize water in a consistent basis.
- Inventory control.
- Notifications.
- Dashboard.
- Support mobile apps.
- Web-enabled.

Reports:

- Volume.
- Period usage.
- Run times.
- Trending.
- By inventory.
- By system and meter.
- By Council list.



Interfaces:

- GIS.
- CIMIS (California Information Management System)
- FUND\$ (or its ERP replacement)
- Work Order System.
- Website: post (push) data to the City website.

Benefits:

- Cost savings.
- Improved community relations.
- Improved data quality.
- Improved service and user experience.
- Reduced environmental impacts.
- Improved productivity.
- Reduced staff stress.
- Ability to reject problems quickly.
- Improved public safety.
- Shorter response, helps with credibility with the community.
- Identified failures more efficiently and effectively.
- Reduce long-term maintenance cost.

D SW 15 Rent Board Case Management Application [24]

Findings:

The Rent Board Case Management Rapid Workflow[®] workshop revealed a number of challenges with the RTS2 custom programmed application:

- Emails and follow-up emails are untracked.
- Redundancy is an issue with work that has been previously done but has to be re-done because it is documented in different systems/repositions.
- Prioritizing cases: counseling, registration, and time sensitive/high impact cases.
- No auto population of data, RTS2. RTS2 does pull data from RTS main.
- Inability to print easily from RTS2.
- Unable to produce/auto generate emails.
- Public spends time talking/educating multiple counselors.
- Inability to link case manager with prosperity finder.
- Inability to generate custom reports from RTS2.
- Inconsistency of entering cases into RTS2.
- Cases are forgotten because of inability to generate tasks in RTS2.
- The lack of compatibility with RTS2 to Excel and Word.
- The lack of central repository for internally generate documents.
- Shared drives – inconsistent naming conventions, version control, and organizational structure.
- Inability to access RTS2/RTS main data when outside the City.
- It is difficult to track properties for special conditions. RTS main.

According to City staff, this results in the following:

- Possible inconsistency of advice and closure.
- Poor reporting and not getting credit for work.
- The lack of accountability of staff time.



- The loss of staff time and opportunity costs.
- Inadequate supervision/review of case.
- Staff frustration and impacted morale.
- Compromised case review.
- Potential impact of not collecting fees.
- Public being charged fees creates poor customer service.
- Inefficient and room for error and it slows down counseling.
- The lack of counselor compliance.
- Distracts counselor from more important counseling work.
- Inefficiency due to the inability to produce an APAR report.
- Have to take RTS2 screenshots (multiple screens sometimes).
- Impediment to follow-up.
- Impacts customers' service, inconsistent advice to customers.
- The lack of accountability and difficult answers: "Counselor shopping".
- It is inefficient to have to pull up multiple screens, adding time to session.
- Decreased ability to report to the Board, the public, and internally.
- Inability to track the number of customers' cases, where agency resources go to.
- Do not know number of cases, thus cannot adjust internal training and outreach.
- Poor customer service reflects badly on the agency.
- It prolongs counseling sessions if documents cannot be found.
- Impacts ability of management to access data outside of office.
- Could delay responsiveness.

The IT Focus Group revealed a number of challenges with the RTS2 custom programmed application:

- There is no COTS for this requirement, it is custom built application developed in Eclipse
- A lot of holes in the initial implementation have not been addressed.
- It was designed to reproduce a paper-based process without a BPI assessment.
- Unrealistic expectations on the part of IT staff and end users.
- Very limited in-house support

According to City IT staff, this results in the following:

- Continuous bug fixing and unstable platform.
- IT staff is pulled off other projects and priorities to stabilize the application.
- Slows down online registrations.
- Need to prioritize between stabilizing the platform and preforming enhancements.
- Professional Services to support the application have proven to be expensive.

Recommendations:

- Implement a Rent Board Case Management Application

Features/Functions

- Use a web intake E-Form.
- Provide tracking tool for outgoing responses.
- Provide automatic responses, emails, and notifications.
- Provide unique identifier for case management.
- Allow for attachments.
- Provide a center repository for data.
- Allow for prioritizing cases.



- Auto populate contact information (pull data) with buttons for issues.
- Ability to print; easily.
- Public could enter “who are you” and get their counselor file.
- Provide case status.
- Ability to pull up a case, override the application with an anonymous customer.
- Adopt the use of OnBase as the storage devices. Develop enterprise taxonomy: name, address, and phone.
- Web-enabled.
- Support mobile device.
- Robust security.
- Provide warnings/important notices.

Reports

- Email lists.
- Open/closed cases.
- Cases by type.
- Cases by length of time.
- Number of contacts.
- Cases recorded for investment/registration.
- Cases by counselor.
- Cases by dates.
- Cases by property.
- Custom Reports.

Interfaces: The proposed system should interface with the following:

- On-Base.
- Property-finder.
- Export data to Excel.

Benefits:

- Improved customer service.
- More consistent counseling and level of service.
- Faster and easier methods for tracking interactions with clients.
- Metrics for assessing caseload, case complexity, timelines and issues.
- Facilitated supervision.
- Increased training opportunities since areas of subject matter weakness will be revealed.
- Increased efficiency in all challenges identified in the workshop.
- Reduced redundancy since client will be referred to the same counselor.
- Next steps will be clear because previous steps were documented.
- Faster processing time since emails and letters will be pre-populated and partially automated.
- Improved co-ordination with other City departments; in all challenges identified in the workshop.
- Track and report on important topics for other City departments.
- Improved customer satisfaction, IT staff, Rent Board staff and customers.
- Be able to properly attend to their exemption verification program.
- Free up IT resources for other projects.



D SW 16 311 Call Center

The 311 Call Center is the centralized call center for City of Berkeley. The group answers twelve (12) City lines, and is presented with approximately 95,000 calls per year. 311 is the alternative to 911 calls for non-urgent police matters. City staff who support this function have to know a lot about the entire City. The group uses Lagan, a Customer Relationship Management application, to track calls and “swivel chair” back office applications such as FUND\$, Accela, etc., using dual screens. 311 Call Center staff use a CRM knowledge-base, Google, and other sources to get information.

The system was implemented in 2007. The City is currently migrating from V7 to V14 which is a 3 version difference not 7. According to IT Staff, it’s taken a long time because of vendor and City staff availability. *(Note: given the implementation and Project Management approach identified in the course of the DSP project on other systems, ThirdWave cannot state that this is, in fact, the cause for the delay.)*

The IT Focus Group on the 311 Call Center identified challenges in several key areas:

Technology:

- Lagan technology is not meeting the City’s needs.
- Inability to find documents quickly on shared drives.

Operational and policy:

- 311 Staff levels are limiting the ability to maintain the City goal of a 95% answer rate
- Need for City department staff training
- 311 operating hours

Each one of these is addressed individually below.

Findings:

The 311 Call Center IT Focus Groups revealed a number of challenges:

- **Lagan is not meeting the City’s needs.**
 - Lagan is not easy to use.
 - Lagan is not fulfilling the City’s needs, requiring a larger investment in staff time and increased support costs.
 - Some script flows are no longer valid.
 - Lagan is a very complicated backend system: municipalities often have several IT staff support it. The City has .25 FTE. (This group lost an IT resource because they were funded by another department.)
 - Development can’t be electronically migrated into the production environment.
 - Cannot reclassify cases in V-7, but can with upgrade to V-14. IT lacks the staff resources to complete the upgrade to V-14.
 - Lagan lacks reporting capabilities.
 - Lagan lacks a dashboard.
 - Lagan does not have a mobile app; it uses a third party app (Click Fix), which is not fully integrated with Lagan.
 - Lack of ability to identify duplicate cases in V7
 - Lack of ability to identify duplicate customer records
 - Back end maintenance of the knowledge system challenging.



- Lagan cannot index the City website for knowledgebase.
- Lack ability to identify duplicates in knowledgebase.
- Inability to track end users on the system.
- Scanning: hand written truck reports are scanned and data entered (2 hrs./day by one person).
- There is a lack of IT staff to work on the backend configuration of CRM Lagan (Verint).

According to City staff, Lagan's technology issues results in the following:

- Information is not current.
- 311 staff may give out outdated information.
- Spend a lot of time searching for information. (30 minutes for each staff (per day), 8.5 FTEs., or the equivalent of 1,020 hours per year – which equals .5 FTE.)
- Cases go to the wrong department, and stay in the wrong person's queue, until it is escalated. Automated reminder can be set up in configuration but was not done at initial set up of system.
- Lack of real time data.
- Lengthy knowledge searches extend customer wait time on hold

Recommendations:

Replace the existing Lagan system with a Customer Relationship Management (CRM). CRM is a term that refers to the policies, practices and technologies organizations use to manage and analyze customer interactions and data throughout the customer lifecycle, with the goal of improving customer relationships and enhancing customer service.

Features & Functions:

- Enterprise application with a single point of entry.
- Web-enabled.
- Mobile application: for City staff and community.
- User friendly GUI (Graphical User Interface).
- Ability for non-programmers to configure the system.
- Drop down menus.
- Ability to reclassify and reassign a case.
- Workflow Automation, automatic notifications and escalations.
- Provide status tracking and track deadlines.
- Customer ability to check status.
- Public Records Act module.
- Ability to track the status by City staff and the public.
- Merge duplicates: people and customers.
- Avoid duplicates.
- Knowledge database repository.
- Allow certain key users to update the knowledgebase.
- Provide the ability to migrate data from development into the production environment.
- Cloud-based.
- Provide KPIs dashboards
- Support collaboration.
- Prioritization of tasks with assignable deadlines.

Reports:

- Aging Report
- PRAs (Public Records Act requests)
- Service Type



- Request by Department
- Tickets by Date Ranges
- By Council District
- By Location/Geo-spatial Analysis
- Management Dashboard
- Report by Agent & Customer
- Queries by topic, requests, dates, etc.
- Status of Requests.
- Number of Requests.
- Completed request by deadlines.
- Ad Hoc.

Interfaces: The proposed system should interface with the following:

- GIS / Map Viewer
- Work Order Systems (Accela, FUNDS\$, ETIMS) and future Work Order systems
- Zero Waste (Garbage Division)
- Business License System
- Phone System
- OnBase ECMS

Benefits:

- Service more calls and customers.
 - Significantly improve customer wait time
 - Full service on-line service center (submit service request/track service request)
 - Improved consistency and accuracy.
 - Improved customer service / service delivery.
 - Enhanced public perception.
 - Compliance with public records requests.
 - Help with Council requests, more satisfied Council.
 - Internal customers would be happier.
 - Improved efficiency and staff time savings.
 - Not having to “swivel chair,” which will eliminate customer holds (equals 2 – 5 minutes, or having to call back at 2:30pm when the drivers come in).
 - Redirect drivers with legitimate missed pick-ups in real time, when they are still in the street.
 - Quicker completion time.
 - Improved follow through.
 - Increased accountability by knowing who is working on an item.
 - Improved staff resource utilization.
 - Make staff available for high-value work.
 - Allow for performance measurement.
 - Improved reports to executives and Council.
 - Improved internal and external communications.
 - Foster public self-service.
- **Inability to find documents quickly on shared drives.**

According to City IT staff, 311 staff have the following challenges:

- The inability to find documents when active on the phone with customers.



- Unable to find accurate and timely information.
- Unable to find historical documents, may have to start over.
- It is difficult to share files.
- Lagan cannot index the City website for knowledgebase.

According to City IT staff, the inability to find documents results in the following:

- Lack of productivity.
- Staff time finding documents.
- Adds to customer hold time/delays in resolving call

Recommendations:

- Replace the existing Lagan system with a CRM system.
- Implement a good repository for knowledge documents.
- Expand capabilities and use of OnBase ECMS as an enterprise repository of City documents and records.

Benefits:

- Improved customer service.
- Staff time savings.

Operational Challenges:

- Staffing levels are limiting the ability to maintain a City goal of 95% answer rate
 - 311 is so tightly staffed that if someone is absent or sick, end up with a high volume.
 - There are not any back up 311 staff resources.
 - There are no growth opportunities for 311 staff.
 - It is difficult to recruit for 311.
 - 311 staff is funded by departments; there are some small departments that would like their calls taken but can't afford the cost.
- Need for City department training commitment
 - Lack training opportunities on new policies, procedures or programs for the other departments (specifically departments they support).
 - Client departments find it difficult to immediately transfer the Community member call when 311 cannot resolve issue or when we do not have the resources to resolve, however the Client department has the knowledge.
 - The client department does not inform 311 staff of closed requests.
- 311 operating hours
 - 311 staffing hours do not allow for staff to communicate with management or work cases within their personal queues. Center operation hours are 8am - 5pm. 311 Staff logs into phone system at 8am and logs out at 5pm resulting in no off phone time to work cases in 311 or personal queue.
 - 311 CSR (Customer Service Representative) also balances the credit card machine after 5 pm, resulting in staff leaving after scheduled work hours.

According to City IT staff, the foregoing results in the following:

- Limited 311 staff levels result in:
 - Missed calls, long wait queues, high abandoned rate and exhausted staff.
 - Affects customer services.
 - Only one person can be on vacation at a time, which leads to low morale, staff burn out and staff call in sick.
- Lack of department training results in:



- Giving customer wrong or outdated information.
- Longer customer waits and call backs amounting to as much as a week later.
- Frustrated CSR when they cannot resolve the issue or when the client department will not take the call if 311 has exhausted research for resolution.
- 311 operating hours results in:
 - There is no time during the day for management to hold staff meetings to address current issues or seasonal demands, which can lead to unclear communication and direction.
 - Cases can age, leading to multiple unnecessary follow up calls on the same issue.
 - Can impact credit card end-of-day closing procedures.

Recommendations:

- Staffing Levels:
 - Replace Lagan with an improved CRM system. (See above.)
 - Increase staff in 311 by one agent to allow for coverage of breaks, absences and to service incoming call volume.
 - Explore the use of retired annuitants for temporary help during peak times and vacations.
 - Explore the use of volunteer help from City residents allowing more involved constituency.
 - Explore using student assistants for back office work.
- Department Training
 - Implement a good repository for knowledge documents, in the OnBase ECMS.
 - Adopt strong OLAs/SLAs with departments, e.g., response times for 311 information requests and closing out cases.
 - Adopt a policy where department take calls when 311 has exhausted resources.
- 311 Operating Hours
 - Change hours to 8:30 – 4:30 matching the Customer Service Counter.

Benefits:

- Staff time savings.
- Improved customer services; reduced wait time, reduced abandoned calls, and service more calls.
- More satisfied Council and City departments.
- Clearer direction and enhanced knowledge for staff.
- Improved service to the customer.
- Better case management.
- Improved morale.

D SW 17 Help Desk Software

Findings:

The Sustainability IT Focus group revealed a number of challenges:

- Double data entry between the help desk in-box and the existing tool, "DOIT".
- Asset management is a problem; it is currently done in a manual method.
- Technical documentation is poor.
- DOIT is not integrated with Active Directory.
- DOIT does not consider software, and does not provide software asset management



- DOIT is incredibly clumsy and time consuming, it lacks auto-routing/workflow automation, and a ticket can only belong to one person.
- DOIT breaks often.

According to City staff, this results in the following:

- Staff time, every day. One or two staff are dedicated on a given day to routing.
- Higher software maintenance costs due to lack of software assets visibility.
- Lack of visibility into service requests and customers have to call to follow up on the status.

Recommendations:

- Replace the existing system with a new enterprise Help Desk application.

Benefits:

- Consolidation to one system used by IT for receiving all requests.
- Better tracking of requests and status.
- Ensure requests are resolved in a timely manner.
- More visibility of customer into their ticket status.
- Improved knowledge base.
- Better reporting metrics.
- Improved asset management.
- Software compliance.
- Improved morale for IT staff.
- Improved customer service.
- Greatly improved productivity.

E SW Software: Enterprise

Enterprise Software denotes applications used by all departments, by all key departments, or many departments across the City. An enterprise technology vision, which the DSP Roadmap proposes, typically adheres to the following:

- Enterprise software benefits several business units across the organization, taking advantage of economies of scale.
- Enterprise software pools financial resources from one or more business units or departments to procure systems that otherwise might not be affordable by one business unit.
- Avoids the purchase of technically disparate systems that provide the same functionality.
- Procures systems that meet an Enterprise Architecture and established technology standards to minimize operational costs and maximize investments in technology.
- Decreases the overall workload on IT staff by not having to provide technical support on numerous redundant applications or applications that do not meet the City's standard Enterprise Architecture or standards.
- Typical enterprise applications include ERP Systems (e.g., financial, human resource, work order, procurement, asset management applications, etc.) Enterprise Content Management Systems, and Geographic Information systems.



E SW 1 Enterprise Taxonomy

Enterprise taxonomy is a high-level hierarchical classification of electronic content facilitating the management and disposition of electronic documents/records, digital photographs, digital video, and/or digital recordings throughout their lifecycle. Taxonomy classifies documents and other digital content into logical groups/subgroups in an Enterprise Content Management System (ECMS) in a manner that is responsive to how information is used by various business units. A standard taxonomy facilitates fast and easy access to content by both staff and the public, when made available via web access.

Findings:

- The City Attorney Public Records Request Rapid Workflow® workshop revealed a number of challenges:
 - Folders/documents in shared drives can be easily lost when they can be moved or deleted.
 - Standard naming conventions do not exist, or are inconsistent at best.
- The City Attorney noted that document management is a challenge because each department, and each attorney in their department, has their own methods for storing documents.
- The Human Resources (HR) Workman’s Compensation workshop noted that documents saved in a shared drive are a challenge:
 - They do not trust the completeness of the documents and the folder structure is not standardized.
 - HR staff have to call Third Party Administrators (TPA) to obtain current medical records because HR cannot find their copies, which is embarrassing and does reflect well on the City’s abilities to manage documents.
- More generally, departments not using the OnBase system are experiencing the common shortcomings of using shared drives, which make it easy to lose folders/documents, they can be moved/deleted and/or there are no standard naming conventions, or existing conventions are inconsistent.

According to City staff, this results in the following:

- Potential Noncompliance and lost documents.
- Inefficient use of staff time to find information.
- Impact Third Party Administrators by resending documents to HR.
- When staff leave the City it is difficult to decipher their filing system.
- There is a lack of transparency.
- It is difficult to make content available to the public.

Recommendations:

- Validate that departments currently using OnBase are using a standard enterprise taxonomy.
- Develop a standard taxonomy (document indexing scheme) and updated records retention schedule for storing and accessing documents/records in a fast and easy manner - prior to rolling out the systems (both are best practices).
- Carry out a physical documentary inventory.
- Develop a taxonomy:



- Develop department taxonomy templates referencing the City’s retention schedule, documents shown in the Rapid Workflow® process maps, and the physical inventory.
- Review the existing OnBase meta data structure.
- Hold stakeholder classification/indexing workshops.
- Design the new standard enterprise taxonomy.
- Stakeholder review and finalize the recommended taxonomy.

Benefits:

- Allows whatever ECMS is deployed at the City to be friendly, intuitive and fast for staff and the public to find and retrieve content.
- Foster end user acceptance, use and a return on investment.
- Staff time savings.
- Compliance with the law.
- Reduces legal risk of the City.
- Improved records management.
- Cost savings.
- Enhanced service delivery.

E SW 2 OnBase ECMS

Findings:

- The OnBase system was implemented by the City Clerk and is currently used by a few select City departments.
- ECMS was identified in the following:
 - As a solution in 10 of the 25 Rapid Workflow® workshops.
 - As a software in two (2) IT Focus Groups
 - As a specific solution in two (2) out of 11 management interviews
 - When asked of the most significant Information Technology challenges, staff noted the following in the online survey:
 - *“One of my biggest concerns is IT support for our department specific software, and software that we use in conjunction with agenda and election deadlines, specifically OnBase, Records Online, Granicus, and Ektron.”*
 - *“Electronic content management”*
- The City lacks an overall ECMS implementation strategy, i.e., a deployment plan for all City departments and the ECMS technologies required by each. Consequently, many departments' ECMS needs have not been addressed and the investment in ECMS is not being fully leveraged.
- The Rapid Workflow® workshops revealed a broad need for enterprise content management across most City departments: ECMS was specifically cited as a requirement in the following workshops/business processes:

▪ City Clerk	Commissioner Tracking
▪ City Attorney	Public Records Act Requests
▪ Public Works	Work Orders
▪ Planning	Entitlement
▪ Planning	Permitting
▪ Human Resources	Worker's Compensation
▪ General Services	CAFR
▪ Budget	Unfunded Liabilities



- Berkeley Police Dept. Public Records Request
- Rent Board Case Management
- The City lacks enterprise ECMS standards, i.e. an enterprise taxonomy (indexing system for all documents/records) required to maximize end user acceptance and use.
- IT Focus Groups revealed the that OnBase is an underutilized platform for enterprise document management

According to City staff, this results in the following:

- Duplicate efforts and increased staff time.
- Increased use and cost of paper.
- Potential for human error, deleting or misnaming files.
- Wasted time looking for information.
- Redundant requests for information.
- It can take a lot of staff time to find documents, across the City.
- A lack of transparency.
- A lack of version control or using the wrong version of documents.
- Duplication of documents.
- Cost of supplies (paper, toners, copier maintenance).
- Exposure to legal risks; the City's retention policy is not implemented consistently across departments.
- Physical storage costs.
- Electronic storage costs on multiple servers.
- Vulnerable in disaster.

Recommendations:

- Carryout an assessment to identify ECMS implementation roadmap for all City departments using OnBase:
 - Imagine (scanning) module
 - Content management
 - Records Management, which is not currently being used for records disposition
- Backfile conversion: scanning of very large quantities of hardcopy documents using a predetermined meta data scheme (taxonomy) to index and store scanned content. Backfile conversion includes stringent quality assurance practices to produce and transmit electronic documents in bulk for porting into the ECMS.
- Develop a standard enterprise taxonomy.
- Adopt the use of Imaging, E-Forms and E-Signatures where appropriate.
- Adopt electronic submittals using OnBase as the ECMS.
- OnBase Implementation:
 - Implement OnBase in phases so that it can act as a city-wide strategic business technology. It will provide a common access method to information for staff, management and the public, where appropriate.
 - Adhere to industry best practices in the implementation process; use a structured/best practice methodology, including standards, and carry out a formal roll out.
 - Integrate OnBase with the future redesigned City Website, using OnBase as the storage for content. Provide easy web access to documents/records to City staff, elected officials, and the public, with appropriate security levels.
 - Provide IT application specialists to support OnBase.



- Provide role-based staff training on each department's taxonomy and applications, i.e., imaging, content management, and automated work flows, as appropriate.

Benefits:

- Cost savings: paper, toner, copier maintenance costs.
- Reduced staff and customer time.
- Allows staff to focus on other important projects simultaneously, e.g., the external audit.
- Provide the ability to share information with departments.
- Save time, money and duplicate storage.
- Enhanced business controls and business process efficiencies.
- Reduced paper waste, improved efficiencies, curtailing the use of hardcopy documents, and helps the City be environmentally green.
- Enhanced public convenience; meet the transparency expectations by the public.
 - More efficient staff/contractors/community.
- Reduced errors, less duplication/version control.
- Better emergency preparedness/resiliency.
- Increased user acceptance.

E SW 3 Automated Workflow

Findings:

- Automated Workflow is currently being used in a limited way across the City in some existing applications.
- Automated Workflow was identified as a solution in 10 of the 25 Rapid Workflow® workshops.
- Many of the requirements for workflow automation were identified as being a feature/function of other department/enterprise solutions.

According to City staff, this results in the following:

- Many documents are routed manually in many of the mission critical business processes assessed in the project.
- Documents get lost.
- Wasted staff time to manually move documents.
- Cost of producing, processing and storing hardcopy documents.

Recommendations:

- Implement an enterprise Automated Workflow solution that can be easily adopted and deployed in all business units where it is required.
- The automated workflow solution can be part of the OnBase system or a standalone workflow engine. Today there are numerous cost effective and user friendly workflow solutions that can be implemented.
- The Automated Workflow software will provide the following minimum features and functions:
 - Tight integration with the ECMS functionality.
 - Native, configurable workflow dashboard to monitor, in real time, the workload of end users.
 - Workflow capabilities that allow both structure and ad-hoc workflows to be defined and tracked.



- Workflows that are configurable to allow different approval processes based on how quickly the content object is to be published (e.g. routine or urgent).
- Workflows that are configurable to allow different approval processes based on where the content object is being published and being authored in the repository.
- Workflow approval process that is configurable to support varying content object states during the authoring process for example, draft, awaiting approval, approved, published, archived.
- Business Process Modeling Notation (BPMN) compliant designer to produce BPMN standard language.
- Support, out-of-the-box, graphical design of workflows with BPMN compliant designer.
- Workflows that are configurable to allow different approval processes if the content object is external.
- Workflow routes to have both serial and parallel routes.
- Flexible and configurable workflow and business rules engine.
- Accommodate alternative approval routing to account for staff absences.
- Web-based workflow and process management, and the ability to interactively manage business processes and related content via the Web and a simple GUI-based browser interface on the client.
- Web workflow with an easy to use GUI-based workflow design tool for creating and defining automated workflows.
- Allow users to create, query, participate, and administer workflows easily using a GUI interface.
- Browser-based workflow dashboard to be displayed natively through a client interface, Wen Services for Remote Portals 1.0 (WSRP) compliant portal product without custom coding.
- Allows the user a unique workflow profile; rights, functions allowed, etc.
- Support graphical workflow design tool; no programming required.
- Allow document flow, action detail capture – including time, date, user, action taken detail where all is captured for reporting.
- Contain a wide range of applications for enterprise workflows, such as design, tracking, administration, and configuration.
- Utilize browser-based architecture, eliminating the administrative burden associated with “thick client” deployment of workflow solutions throughout the extended enterprise including installation, configuration, and administration.
- Utilize out-of-the-box functionality that facilitates rapid deployment and removes the need for extensive development efforts, including delegation, voting, review cycles, reassignment, parallel processing, user-based work assignment, and attachments.
- Utilize security and version control, incorporating powerful security and version control of defined business processes.
- Link documents, content and folders to specific business processes.
- Utilize XML-based process definitions.
- Launch workflows linked to a specific document or document class upon document check-in or its addition to the document repository.
- E-Mail notification providing user configurable notifications that detail user work assignments and status changes of the workflows being tracked.
- Enable the URLs contained in notifications to process the assigned work and/or view its current status.

Benefits:

- Provide functionality that reduces cycle times, and improves productivity by automating, streamlining, and optimizing business processes.



- Reduced paper.
- Business process improvement.
- Reduced timelines to process documents, forms and contracts.
- Improved ability to meet deadlines.

E SW 4 E-Forms

Findings:

- E-Form requirements were identified in the DSP project as a solution in 10 of the 25 Rapid Workflow workshops. Electronic forms can be used to build applications for many departments across the City including on-line/ E-Government applications for the public.
- E-Forms were identified as a requirement in the following workshops:
 - City Clerk Commissioner Tracking
 - Auditor Contract Administration
 - Public Works Work Orders
 - Public Works Refuse Billing
 - Planning Code Enforcement
 - HHCS Contract Processing
 - Human Resources Worker's Compensation
 - General Services CAFR
 - Budget Unfunded Liabilities
 - Berkeley Police Dept. Public Records Request
 - Information Technology Project Management

According to staff this results in the following:

- Wasted staff time to walk forms around, particularly when getting signatures.
- Forms that are not automated and cannot be incorporated into workflow automation.
- Slow processing.
- Makes work more time consuming.
- Business process inefficiencies.
- Additional costs; paper, toner, copier maintenance fee
- Misplaced documents.

Recommendations:

- Implement web-enabled applications that provide E-Forms/E-Signatures as part of the solution, as appropriate.
- Implement an E-Forms development application either as a stand-alone application or as a seamless component of the OnBase solution, allowing the use of electronic forms to meet various requirements (e.g., intelligent E-Forms to replace paper forms and for use with Automated Workflow application).
- Implement an E-Forms solution that can interface to OnBase and other department/enterprise applications, providing the following minimum functionality:
 - Retain the look and feel of paper forms, if required.
 - Provide variable length fields for data entry, eliminating blank spaces when printed.
 - Enhance and simplify forms processing with automatic calculations and data validation.
 - Support electronic signatures.
 - Support database integration.
 - Expedite forms submission via a browser.



- Interact with other applications, including initiating an OnBase workflow process, updating other systems, or authenticating signatures.
- Provide ability to attach associated documents to the form (e.g., documents, photographs, plans or drawings).
- Be accessible from within the City as well as externally via the Internet.
- Architected in a way to interact with other OnBase modules or applications including:
 - Document import capture
 - Web (Online form submission)
 - Web Portal Form creation/submission through portal or a kiosk
 - Index value design and structure
 - Cross referencing
 - Notes and annotations
 - Workflow (form auto-triggers a workflow process)
 - E-mail (form viewed as attachment)
- Maintain revision control on electronic forms to offer flexibility to display forms in their submitted state or with a new layout.
- E-Forms may be used by themselves, with or without the use of E-Signatures.
- Meet State of California’s requirements for authenticated signatures, e.g., Government Code Section 16.5 supporting Digital Signatures.

Benefits:

- Facilitates staff access to information and services.
- Facilitates dynamic relationship with the public, enhanced service delivery.
- Reduced traffic and driving.
- Enhanced efficiency.
- Improved public convenience and meet the expectations.

E SW 5 E-Signatures

E-Signatures are commonly used to support the use of E-Forms; electronic forms can be used to build applications for many departments across the City including on-line/ E-Government applications for the public.

Findings:

- E-Signature requirements were identified in the DSP project as a solution in eight (8) of the 25 Rapid Workflow® workshops.
- E-Signatures were identified as a requirement in the following workshops:

▪ City Clerk	Commissioner Tracking
▪ Auditor	Contract Administration
▪ Public Works	Work Orders
▪ Public Works	Refuse Billing
▪ Planning	Code Enforcement
▪ HHCS	Time Study & Tracking
▪ HHCS	Contract Processing
▪ Human Resources	Worker's Compensation
- The Agency requires an E-Signature capability for E-Forms used with or without automated workflow processes.



According to City staff, this results in the following:

- Walking documents around for signatures
- Delays in processing documents that require approval and/or signatures.

Recommendations:

- Implement an E-signature solution providing the following minimum functionality:
 - Work seamlessly with the proposed E-Forms application and/or the City's ECMS solution.
 - Be a seamless component of the ECMS solution.
 - Ensure the authenticity, integrity, and non-repudiation of its electronic documents.
 - Meet State of Colorado's requirements for authenticated signatures.
 - Support the State of California's requirements for authenticated signatures, e.g., Government Code Section 16.5 supporting Digital Signatures and California's Uniform Electronic Signature Act. (Civil Code Section 1633.1-1633.17).
 - Support the Uniform Electronic Transactions Act (UETA) which is a federal statute that has been adopted by 47 states.
 - Support E-Signature approvals, either from a Web browser or from within the ECMS.

Benefits:

- Enhanced online transaction.
- Eliminate walking around to collect signatures.
- Reduced traffic and driving.
- Provide easy access to services.
- Facilitate dynamic relationships with the public and enhanced service delivery.

E SW 6 Project Management

Findings:

- The Department of Information Technology Project Management Rapid Workflow[®] workshop revealed a lack of expertise with formal project management methodologies.
- The Planning Entitlement Rapid Workflow[®] workshop identified that the City is using Accela as a project management tool, instead of a permitting tool.
- The Finance Department management interview revealed the following:
 - There is lack of project planning.
 - Project Management has been getting worse in the past few years, there were a lot of projects that they were very ambitious about but they did not complete the task on time. Project Managers were pressured to complete the project on schedule.
 - Lack of quality control in project delivery.
 - Acceptance testing: there has been insufficient time for acceptance testing.
 - Lack of project delivery best practices.
 - Generally speaking, this sentiment was expressed throughout all tasks of the project.

According to City staff, this results in the following:

- Projects are not being delivered in a timely manner.
- The current process is inefficient.
- Lost revenue, staff can't track the actual time for time-based billing on a project.



Recommendations:

- Implement a new Project Management Solution:

Features/Functions

- Dashboard
- Resource avocation/tracking schedules
- Notifications
- Reporting
- Statistics
- Timesheets
- Resources
- Budgets
- Staff time
- Payment tracking
- Prioritization
- Provide project management ITSM (IT Service Management)

Interfaces

- Active Directory
- Outlook
- ERP
- "ITSM" (DoIT replacement)

Benefits:

- Cost of services will be better.
- Council members will be happier.
- There would be visibility of ongoing projects
- More efficient staff use.
- Increased on-time project delivery.
- Ability to make better informed decisions.
- Cost savings by not starting things that can't be done (economies of scale).
- Improved transparency
- Improved project completion, trust, and credibility.

E SW 7 Worker's Comp Application [16]

Findings:

The Human Resources (HR) Worker's Compensation Rapid Workflow® workshop revealed a number of challenges:

- Employees and supervisors submit incomplete injury/incident reports.
- Supervisors do not keep track of employee medical status and duty.
- HR is drowning in the number of hard copy documents that come into HR.
- HR is not getting completed forms in a timely manner.
- HR does not know how many employees are off on Worker's Comp at any point in time.
- HR is not providing meaningful oversight to supervisors and department heads.
- HR is maintaining too many duplicate records in numerous steps of the process.
- Documents are save in a shared drive; they do not trust they are complete and the folder structure is not standardized.



- HR has to call Third Party Administrators (TPA) to obtain current medical records because HR cannot find their copies.
- HR sends an inordinate amount of time filing documents in file folders.
- HR spend time following up on receiving documents.
- Supervisors and managers have no access to the employee claim status.

According to City staff, this results in the following for the participants:

- Human Resources staff and Third Party Administrator (TPA):
 - HR staff time to follow up.
 - HR staff spend significant time to file, track, and retrieve documents.
 - There is a need to obtain the authority to extend the time for temporary hire.
 - Temporary positions cannot be filled permanently.
 - The TPA cannot investigate the claim like they should. Impacts the TPA by resending documents to HR; inefficient use of TPA resources.
- Departments and Staff:
 - May affect employee pay.
 - Delays in medical treatment affects employee morale.
 - Affects employee to return to work.
 - Not knowing how many employees are off on Worker's Comp affects the workload of the business unit. Other employees absorb the workload.
 - Work cannot be planned without knowing how long the employee will be out.
- City:
 - Increased costs to the City.
 - City costs in maintaining salary, benefits and temporary replacement.
 - Potential violation of state laws.
 - Employee relations fines, if the union gets involved.
 - The cost of paper, toner, copier maintenance, space, folders, filing cabinets; and the cost of retrieving documents/records from archive storage.

Recommendations:

- Implement a new Workers Compensation Filing Application

Features/Functions

- Make all forms E-forms.
- Data validation n forms/DB.
- Supports E-signatures.
- Web enabled application.
- Supports mobile devices.
- Forms would replicate state forms.
- Provide varying levels of access and confidentiality.
- Support E-folders for employee records.
- Automated workflow.
- Auto-notifications
 - From TPA to HR to supervisors.
 - Auditor to employees/HR.
- Provide/transmit E-letters and standard templates.
- Application is accessible to employees, supervisors, department, HR/TPA, and auditor.
- Manage active employees, open claims, retired and terminated.



Reports

- Medical status
- Employee out and pending status by departments.
- Salary continuation (for the Auditor, HR, Department Supervisors)
- Lost time

System Requirements

- Develop and adopt a standard enterprise taxonomy.
- Back file conversation.

Interfaces

- On Base Enterprise Content Management System.
- Third Party Administrator systems (where appropriate).

Benefits:

- Time savings for staff, supervisors, and HR.
- Save money addressing medical treatments.
- Employees can return to work quicker.
- HR would know if modified duty can be offered.
- Department supervisors would know the impacts on work units.
- Space and time filing savings.
- Staff resources could do more high value work.
- HR staff could go to unions for help with employee safety.
- HR staff could provide meaningful information and additional training.
- Departments could do better long range planning.
- HR supervisors/managers would have direct access to the data base.
- Added convenience if HR staff is on vacation.
- Improved records management.
- Cost savings.
- Enhanced customer service.

E SW 8 Auditor Contract Administration [7]

Findings:

The Auditor's Contract Administration Rapid Workflow® workshop revealed a number of challenges:

- There are no system controls to allow project management services to go beyond the Not to Exceed (NTE) amount.
- The FUND\$ CMS module creates extra work for IT staff/City Auditor. If the Project Manager creates another record by accident, the initial record is frozen and cannot be changed.
- Much of the information cannot be seen City-wide.
- The use of 4x6 index cards are used to document contract information: (The index has a preprinted contract number.)
 - Executed date
 - Contract term date
 - NTE amount
 - Council approved amount



- CMS number
- Vendor information
- Requisition number
- Original requisition amount
- There are too many individuals involved in the process.
- Process is manual and paper driven.
- FUND\$ Purchasing and FUND\$ CMS do not talk to each other.
- The use of wet signatures.
- Purchase Order increases can delay how soon a vendor can get paid.
- This process takes long too.

According to City staff, this results in the following:

- Going beyond the NTE amount creates more work and wasted staff time, runs the risk of not moving enough money and erodes the confidence of the Council.
- The longer elapsed time causes frustration and extra work.
- Lack of transparency, due to the inability to see information across City departments.
- Staff spend time searching.
- Work could start prior to the contact execution.
- The work is delayed and results in calls and questions.
- Potential loss of information; wasted staff time to write data down manually, duplicate information.
- Potential for human error.
- Storage space.
- Cost: paper, toner, copier maintenance, and a carbon footprint due to driving.
- Delayed work makes vendors not want to do business with the City.
- Higher vendor costs.

Recommendations:

- Implement a new Contract Administration System:

Features/Functions

- System prevents over spending beyond the NTE amount.
- Automated Workflow: Enforce business rules, auto notifications, and reminders.
- E-signatures, and an adoption of an E-Signature policy.
- Enterprise system accessible by all City departments who need it.
- Provide configurable database for CMS data, including the following minimum data:
 - Executed date
 - Contract term date
 - NTE amount
 - Council approved amount
 - CMS number
 - Vendor information
 - Requisition number
 - Original requisition amount
 - Contract number
- Provide ability to do calculations to enforce Council spending authority for POs and requisitions.



Interfaces

- Purchasing application in the new ERP
- AP module in the new ERP
- Grants Management application
- Other contract software, revenue, expenditures and leases.

Reports

- Aging: contracts/timeliness performance.
- Volume of contracts, dollar amounts spending.
- By department, not expired.
- By vendors.

Benefits:

- Improved cost controls create a more efficient process.
- Improved service delivery to the public.
- Access to information.
- Better vendor relations.
- More time for high value work.
- Saves money.
- Increased transparency.
- Improved morale/accountability.
- Improved reputation with vendors.
- High value work.
- More efficiency.
- More accurate information at staff's fingertips.
- Better business controls and reduced fraud risk.
- Enhanced timeliness.
- Expand the City's vendor pool.
- More competition would provide lower costs.

E SW 9 Public Works Asset Management [3]

Asset management was addressed throughout all phases of the DSP project. Given the importance of City assets, and the cost on maintaining them, the existing business processes and asset management software present formidable challenges.

Findings:

The Public Works Work Order Rapid Workflow® workshops examined three similar process:

- Traffic Engineering
- Fleet
- Parks, Recreation and Marina

The three processes revealed the following related to work orders and asset management:

Application functionality:

- Inability to draw on work orders, i.e., traffic diagrams.
- HTE system Work Order has been overly customized.
- CRM Lagan is old technology.
- Inconsistent data attributes: Traffic/Data dictionary.



- Lack of inventory of pavement markings.
- Lack of parts and materials inventory.
- Lack of ability to track work orders cross-functionally.
- Lack of workflow automation.
- Lack of facility management software.
- Lack of a feedback loop (internally/community) and the status of a work order.
- When a Lagan case is created it comes out as a Customer Service Request, not an HTE work order.
- Lack of online forms for the public.
- Lack of E-Signature capability.
- Lack of ability to reclassify work orders.
- Work Orders are not mobile-enabled.
- Lack of remote access to work order system.
- Lack of reporting capabilities.

Work processing:

- Duplicate data entry.
- Difficulty taking index cards/documents forward into applications.
- Lack of clear policy, roles and responsibilities related to work orders creation and completion.
- Lack of a Database Administrator (DBA)

Integration

- Lagan CRM is not integrated with the HTE Work Order system.
- GIS is not integrated with Lagan and HTE work order systems.
- Lack of integration with payroll/AR/AP.
- HTE, Lagan, and Excel are not integrated with asset management.

According to City staff, this results in the following:

- Staff time leads to increased errors.
- Lack of a consistent method of communication to crews.
- Lack of work history.
- Cannot get information out of the HTE system because of the lack of vendor support. It is more expensive to get upgrades.
- Lagan is cumbersome, making it inefficient.
- Errors due to miscommunication.
- Inability to plan/budget efficient maintenance program.
- Delays in job completion, causing customer frustration, delay of scheduling and audit findings.
- Duplicate work.
- A lack of accountability.
- Research is made difficult and there is a loss of institutional knowledge.
- It distorts communication requests and internal requests.
- Delayed of Work Orders.
- Dissatisfied employees.
- Inability to properly utilize staff resources.



- Inefficiency due to lack of data.
- Cannot schedule preventative maintenance.
- Impacts customer service and workload.
- Duplicate work orders and labor.
- Inaccurate data.
- Lack of efficiency slows the process and could affect accuracy.
- Lack of information/access to information.
- Limits ability to understand current workload and timely accurate information.
- Cannot do trend analysis.
- Lack of data transparency.

Recommendations:

- Implement a new Asset Management Solution:
Implement a contemporary fully functional web-enabled Enterprise Asset Management System with a friendly GUI providing the following integrated modules: Inventory Management, Asset Management, Work Orders, Maintenance / Preventive Maintenance and Construction Project + Capital Program Management functionality in an integrated suite. (This solution could be its own suite of applications or part of an ERP solution.)

Features/Functions

- Enterprise application
- Cost information for assets
- Ability to draw work orders
- Ability to search work orders
- Inventory management
- Asset management; provide attribute data on assets
- Fleet management
- Facilities management
- Cross-functional real time tracking of work orders
- Workflow automation; task routing assignment
- E-forms
- E-signatures
- Ability to check status internal/public
- Auto generation of work orders
- Auto notification of work orders to mobile device
- Ability to reclassify work orders
- Driving directions/optimization
- Accessible to persons involved in asset management activities: work crews, managers, directors, or to anyone doing asset management in the field.

Reports

- By Work Order Type
- Council District
- Aging
- Billing
- Trends
- Exceptions



- By Geographic Area
- Labor and Materials (streets, electrical)
- Inventory
- Forecasting
- Time to Complete Work Order
- By employee
- History
- Open, Closed, and Incomplete
- SLA (Service Level Agreement)
- Transferred Work Orders
- Maintenance: planned and scheduled
- Ad hoc
- Management dashboard
- Asset type
- Lifecycle
- Asset attribute (categorized by type)
- Changes to assets

Interfaces

- Customer Relationship Management
- ERP (Payroll, AP, AR)
- On-Base

Benefits:

- System Benefits
 - Replacing Lagan with a new application will offer a user friendly application with a strategic open architecture.
 - Reduced risk and long term software savings.
 - Better inventory management.
 - Quick access to data, better Public Records Act responses.
 - Data transparency.
 - Improved forecasting.
 - Improved metrics.
 - E-Signatures will eliminate driving around and produce staff time savings.
 - Stable application, as business needs change, they could be accommodated.
 - Better picture of City services, could produce annual report of work produced as well as custom reports.
- Operational Benefits
 - Reduced duplication of effort and staff time saving.
 - Improved accuracy and reduced errors.
 - Quicker service delivery to the community.
 - Reduced complaints from the City and public.
 - More uniform and accurate decisions.
 - Straight forward training.
 - Improved efficiencies and staff productivity.
 - More efficient expenditure of resources.
 - Improved planned maintenance.
 - Reduced asset management costs.
 - Improved accountability.



- Reduced complaints to Council, happier consumers and reduced phone calls to City staff.
- Better scheduling and use of resources and Just-in-Time (JIT) inventory.
- 24/7 customer service.
- Prioritized/better informed decisions.

Note: *The asset management requirements identified by the City Auditor and Public Works workshops above will be combined into one initiative in the DSP Roadmap.*

E SW 10 Contract Management [13]

Findings:

Contract Management issues were identified in Rapid Workflow® workshops (Health, Housing & Community Services Contract Management and Office of Economic Development) as well as the Management Interviews (Health, Housing & Community Services Contract Management and City Auditor)

The Health, Housing & Community Services Contract Management Rapid Workflow® workshop revealed the following challenges:

- Staff involved in this process are not getting all documents timely or are very late.
- Documents are not filled out correctly.
- There is an inability to consistently identify when a contract has been stalled.
- It takes time to receive insurance documents for the City of Berkeley from insurance companies.
- The time it takes to decide what documents are required for a specific contract.
- Assembling the contract is time consuming, not enough staff time to do this.
- At any point in the process, a contract can be kicked back to any prior point.
- The vendor does not think about the insurance amounts.
- There is no consistent way to close the loop to the Project Manager that the contract is finally executed.
- This process requires a lot of walking around.
- The existing process is a paper intensive process, and not automated.

According to City staff, this results in the following:

- Not getting all documents slows down the whole process.
- Sometimes there are arguments with vendors.
- Sometimes staff cannot execute a contract, lose funds or not get their work done.
- Staff time to figure when a contract has stalled, and walking to other staff desks'.
- Determining what documents go in a contract slows down the process.
- The inability to close the loop with the Project Manager can delay the start of contracted work.
- Verify the status of contracts takes staff time.
- Walking around in this process takes up staff time for the supervisor and staff, creating a potential for loss and errors.



Recommendations:

- Implement a new Contract Management Application

Features/Functions

- E-Contract Documents
- E-Signatures and delegate signature/approval, and an internal electronic approval feature (similar to the functionality of NeoGov).
- E-Forms with data validation.
- Automated Workflow: Out-of-office, signature validation, reject/resubmit
- Provide check boxes to select the required documents for the contract packet, i.e. depending on the expenditure/revenue, different dollar amounts would get different documents.
- Status
- Metrics
- Deadlines
- Version Control
- Ability to assemble an electronic Contract Package.
- Automatic e-notification when a contract is completed.
- E-Form with insurance amounts.
- Web enabled
- Support s mobile devices

Interfaces

- OnBase ECMS

Benefits:

- Ability to negotiate a higher level of responsiveness (Service Level Agreement).
- Staff time and money savings, protecting the revenue stream.
- Improved quality/timeliness of the process.
- Contracts will be executed faster.
- City staff would be less afraid to work on contracts.
- Capacity to administer more community agency grants (i.e. SSB Mini Grant contract).
- Increased likelihood that vendors will meet the City's insurance requirements.
- Start work on time.
- Staff would have time to do high value work.

E SW 11 Customer Relationship Management

Findings:

Customer relationship management requirements were identified throughout the project in the following:

- Rapid Workflow® workshops, including:
 - Public Works Private Sewer Lateral, which revealed that since information is not shared, it is difficult to manage customer contact information, making it difficult to obtain correct contact information.
- IT Focus Groups:
 - Software Initiatives
 - 311 Call Center (See D SW 16 above.)
- Management Interviews:



- City Manager: *“The City has 311 and LAGAN (a community interface for complaints/issues) and there is no accountability with it. City employees working on requests receive a list at the end of the month. They need a trigger, and the number of days since the request. Need ability to notify, track, and close an issue.”*

According to City staff, this results in the following:

- Ineffective use of staff time.
- Inability to effectively process, respond to and track customer requests.

Recommendations:

- Implement the CRM solution identified in the DSP initiatives identified in D SW 16 311 Call Center.
- According to the City Manager, the new CRM should also provide:
 - Automatic triggers.
 - The number of days since the request.
 - Notifications.
 - Ability to track and close an issue.

Benefits:

- See D SW 16 311 System above.

E SW 12 Accela

The Accela application was implemented in a number of departments; it is used for permitting, business licensing, and asset management. According to staff and management the implementation has been plagued with drawbacks and delays at a considerable cost. The project was further impacted by Accela hiring away City staff involved on the project and key stakeholders departing from the City throughout the implementation. While the DSP project did not carry out a detailed analysis of the Accela system, there is a general consensus that the Accela system, as a project, needs a reset.

Findings:

- The Finance Department Management Interviews revealed a number of challenges including:
 - *“Accela can’t upload over-payments. Staff have to go back and make changes, record them twice, from Accela to FUND\$. Refunds have the same challenge, resulting in duplicate effort instead of an electronic data transfer.”*
- The IT Focus Group workshop revealed a number of challenges including the following:
 - Accela application is programming intensive.
 - Platform Change Management is difficult to administer.
 - Accela requires too much programming rather than configuration for being off-the-shelf software.
 - There is a poor software migration functionality.
 - There is no gatekeeper to keep track of changes and version control.
 - There has been a lack of project management City-wide
- Staff comments in in the Online Staff Survey include the following:
 - *“We are still struggling to get Accela set up to do what we need it to do.”*

According to City staff, this results in the following:



- There is a misallocation of IT resources.
- IT staff have to use the configuration tool to make the business process work.
- The DEV, TEST, and PROD environments get out of sync, fixing it might break something else – or overstep someone else’s work.
- Accela requires a lot of scripting.
- Poor customer satisfaction.

Recommendations:

- Adopt change control policies, procedures and methodology
- Implement change control software tool to manage system changes
- Implement Configuration management and Script migration tools
- Evaluate other solutions by business need/module. (Which could be difficult given the City’s investment in Accela.)
- Hire or contract dedicated staff to do Accela scripting.
- Provide end-user training.
- Review existing business processes prior to requesting a configuration/scripting change.
- Consider a better scripting interface with a better debugging capability, i.e. Visual Studio.
- Given the challenges of the Accela implementation over the last several years, carry out a detailed baselining of all current Accela initiatives, including the following:
 - Baseline the status of each department implementation.
 - Map planned versus completed scope against a formal project management framework.
 - Develop a formal set of requirements, or update existing specifications.
 - Produce a structured Work Breakdown Structure of remaining tasks for each department, including a resource allocation plan.
 - Develop a formal narrative Scope of Work for each department.
 - Produce a formal and detailed proposed MS Project Schedule encompassing all departments, as the proposed work will be treated as one project.
 - Provide the City’s consultant a formal, Fixed Fee request for proposal, to complete each department’s Accela implementation.

Benefits:

- A completed Accela implementation,
- A return on the significant investment in the Accela implementation.
- Departments will receive the technology they need to provide the required services to the residents and business community of Berkeley.
- More effective use of IT Staff, which can be assigned to other initiatives.

E SW 13 E-Fax System

Findings:

The IT Focus Groups revealed that the existing E-Fax system is not performing adequately.

According to City staff, this results in the following:

- Intermittent issues sending and receiving faxes in multiple locations
- Interruption of daily operations for certain business groups
- Difficult to integrate legacy fax machine hardware with VoIP phone system



Solutions:

- Adopt a secondary, stand-alone fax system.
- Explore e-Fax options for sending and receiving faxes.

Benefits:

- Stability of the Citywide fax solution.
- Reduced administration time.
- Improved customer service.

E SW 14 Office 365

Findings:

The IT Focus Groups revealed that there are considerable system problems with Office 2013 applications, specially lagging, freezing and crashing.

According to City staff, this results in the following:

- Impacts staff productivity on a daily basis (Word, Outlook).
- There is a high call volume to the Help Desk.
- Customer dis-satisfaction.

Recommendations:

- Immediate solution is to provide training to IT staff on trouble shooting.
- Explore migrating to Office 365.

Benefits:

- Productivity and customer satisfaction would improve.
- Office 365 will enable redundancy and services will be hosted offsite thus improving productivity and reducing downtime
- Office 365 will enable access to documents in case of emergency via web and One Drive

E SW 15 Enterprise Resource Planning (ERP)

The City of Berkeley is currently going through the procurement of an Enterprise Resource Planning (ERP) system. Consequently, identifying key requirements for an ERP was not a priority of the DSP project. However, because a vendor was not selected at the time of the project – and the features and functions of the future ERP were not known, a number of workshops were held with City departments that addressed features and functions commonly provided by ERP systems.

ERP capabilities were addressed in the following Rapid Workflow® workshops:

- General Services, CAFR [8].
- Finance, Revenue Accounting [9].
- Budget, Unfunded Liabilities [22.]

ERP capabilities were addressed in the following Management Interviews:

- City Auditor.



E SW 15.1 General Services, Comprehensive Annual Financial Report (CAFR) [8]

Findings:

The General Services CAFR Rapid Workflow[®] workshop revealed a number of challenges in the process:

- Systems challenges:
 - The process depends on a manual process.
 - There are many ongoing changes made to the GASB requirements.
 - FUND\$ cannot handle the GASB requirement changes, which have to be done in Excel.
 - Document management is a manual process.
 - Excel has rounding errors.
 - Time preparers: information needs to be prepared in a certain amount of time. The CAFR process is carried out at the same time as the audit process.
- Operational challenges:
 - The Accounting team does not fully understand the operation of the City, i.e., constructions cost, IT costs, etc.
 - Staff do not have answers to the questions related to the accrual basis.
 - Departments do not see the CAFR as a priority.
 - Decentralized accounting system and ledgers; some departments do not have subsidiary ledgers.

According to City staff, this results in the following:

- Inefficient use of staff time.
- Prone to human errors, sometimes staff forget to make changes, delete or misname files.
- The current process is inefficient.
- Staff require more training, depending on the accounting staff.
- Have to do extra work, generate reports out of FUND\$ then put that data into Excel and prepare the statements out of Excel.
- May not produce the high quality product they would like to produce.

Recommendations:

- Implement a CAFR Extended Reporting Application

Features/Functions

- Produce the CAFR.
- Export reconciled data formatted per the CAFR requirements.
- Automated data migration and population from FUND\$ to different sections of CAFR.
- Workflow automation.
- Select a system/vendor who update their software on an ongoing basis as GASB requirements change.
- Work in conjunction with the new ERP system.
- Put information in department budgets and spending in OnBase ECMS.

Reports

- Single Audit
- Grant
- IDC
- State Controller



Interfaces

- FUND\$ or new ERP System
- OnBase ECMS
- Business Intelligence tool

Operational Recommendations

- Identify key financial staff in each department and provide training to staff.
- Provide more communication ahead of time in terms of what will be needed and why it is important.
- Expand department staff knowledge of accounting.

Benefits

- Saved staff time.
- Reduced human error due to manual posting of entries.
- Ending balances will be forwarded automatically to be the beginning balance of next fiscal year.
- Auto alert for the status of workflow to the assigned personnel.
- Related staff in other departments will have no excuse not to input their portions as a priority.
- Improved the coordination between Accounting and City departments.
- Allow staff to focus on other important projects simultaneously, for example, the external audit.
- Tailor-made reports are much easier to obtain and generate.
- Improved the overall quality of the reports.
- Improved overall quality of the finance system.

E SW 15.2 Finance, Revenue Accounting [9]

Findings:

The Finance Revenue Accounting Rapid Workflow[®] workshop revealed a number of challenges in that process. (This information may be incorporated into the ongoing procurement process and evaluation of ERP systems.)

- Mis-postings from one fund module to the other.
- Individual modules have a different rule on closing than the General Ledger.
- Inability of CIS/MR to identify a batch number at the time of the deposit.
- Lock box creation is not automated.
- No full integration between GL and subsidiary ledgers.
- When a payment is entered it is not posted to the account.
- Inability to have a system generated TROD.
- Delinquency notices are hard to work with.
- Searching for customers in FUND\$ is cumbersome.
- FUND\$ MR is not user friendly.
- Adjustments require complete reversal of the process: Accela and ETIMs.
- MR/CIS is not written to reflect the full accrual basis of accounting.
- The FUND\$ database is not clean.



Accela issues:

- It is difficult to reconcile between Accela and FUND\$. No one is assigned to do this.
- Bank reconciliation is not using the FUND\$ system in the process: lack of automated bank reconciliation.
- Reports are not easily generated: Accela, FUND\$, ETIMs.
- Accela/ETIMs: the payment processes are not able to work in multiple batches.
- Search tools are not available in Accela/ETIMs.
- Breakdown of cash receipts are not accurate in Accela/ETIMs.
- Parking receivables from Xerox changes every time it is run.

According to City staff, this results in the following:

- Mispostings require staff time and rework; reversing the payment, printing the report, writing notes, approving and sending to the Treasury. Reconciliation is hard.
- Information is in the wrong year/month.
- Inability of CIS/MR to identify a batch number is a major obstacle for bank reconciliation, which delays work.
- Lock box creation is prone to errors, publication of posting.
- GL/Subsidiaries have inaccurate balances.
- Presents an equity issue to Auditor/user.
- Payments not posted to the account create penalties to the customer.
- Inability to generate a TROD report slows down production in treasury.
- Delinquency Notices require a lot of staff time and customer complaints.
- The difficulty of searching for customers results in a tendency to generate multiple/duplicate accounts.
- It takes longer to research.
- The lack of accrual basis accounting requires staff time to make adjustments so the CAFR can be prepared.
- There is no confidence in FUND\$ data.
- Requests get delayed and are costly.
- Reconcile problems between Accela and FUND\$ could result in fraud without knowing it.
- The lack of automated bank reconciliation causes inefficiencies.

Accela issues result in:

- Inaccurate information.
- Have to call IT for reports, making it inefficient.
- User cannot run their own reports
- Cannot do audits, loss of revenue.
- Production slows down.
- Makes reconciling difficult and cannot verify accuracy.
- Staff time and the inability to find information.
- Hard to find payments because it is difficult to use Accela.



Recommendations

- Implement a new ERP Solution:

Features/Functions

- Integrated modules
- Consistent business rules and Standard Operating Procedures (SOPs).
- Identify batches at the time of deposit, involving accounting in the process.
- Adopt scanning on payment posting.
- Adopt electronic lock box process.
- Direct posting of payments.
- Generate a TROD.
- Automatic generation of delinquency notices.
- Provide robust search tools.
- Provide accounting based adjustment work flow.
- Provide accrual basis of accounting.
- Payments should work in multiple batches for one user.
- Easily configurable
- Ability to break out cash receipts consistent with subsidiary.
- Provide automated bank reconciliation.
- Embedded internal controls

Interfaces

- Accela
- ETIMs
- Wells Fargo
- Official payment
- Pay lock
- Bank Up (Refuse payment)

Benefits:

- Happy customers/staff.
- Staff time savings.
- Eliminate timing discrepancy, eliminating need for adjustments.
- Reconciliation process would be faster and easier.
- Reduced errors.
- More relatable detailed data, creating more confidence.
- Accurate account balances.
- Improved efficiency, preventing fraud and there is no need to create an Excel file.
- Easier/timely collection has increased revenue.
- No duplicate accounts, making it easier to find older accounts.
- User/customer satisfaction.
- Prepare CAFR from the system, reducing overtime.
- Improved confidence of data.
- Could provide salary increases for staff from cost savings.
- Increased confidence in the IT department.
- Clean audit opinion.
- Possible increase in revenue.



- Accurate CAFR, the City will maintain a good credit rating.
- Fewer mistakes.
- Less likely for fraud to happen.
- Detect irregularities in a timely manner.

Accela benefits:

- Staff time savings.
- More management analysis to do high value work.
- Speed up production.
- Treasurer could produce performance metrics.
- Improved process and reporting.
- Employee empowerment.
- Increased confidence.
- Easier to research.
- Accurate data.

E SW 15.3 Budget, Unfunded Liabilities [22]

Findings:

The Office of Economic Develop Unfunded Liabilities Rapid Workflow® workshop revealed a number of challenges in that process. (This information may be incorporated into the ongoing procurement process and evaluation of ERP systems.)

- FUND\$ does not provide forecast information.
- FUND\$ is not agile enough to allow for what if scenarios.
- FUND\$ does not provide adequate reports for processing the budget.
- There is no set software to prepare budget documents. (Staff are using several application software to accomplish this.)
- Using shared drives to manage budget information.
- Open government is a challenge because of the time it takes. By the time the information is published the numbers have changed.

Operational issues

- Departments are not processing information consistently.
- Departments do not submit information in a timely manner.
- Department work not complete, accurate or adequately reviewed.
- Have to submit reports 30 days in advance of publishing.
- New department staff are not adequately trained.

According to City staff, this results in the following:

- Manual calculations, which increase the risk of errors.
- Forces staff to use other systems.
- Slows the process down.
- Makes tracking difficult.
- The data may not be current.
- Slows the process down, which could result in errors.
- Staff time:
 - Waste time looking for information.



- Waste time with corrections, causing delays.
- Redundant requests for information.
- It takes a full day to PDF the budget books.

Recommendations:

- **Implement a new Budget/Fiscal Application**

Features/Functions

- Ability to do forecasting.
- 5-Year projections.
- Ability to do what-if scenarios.
- Produce one enterprise budget.
- Workflow Automation.
- Charts using department templates.
- Summary schedules.
- CIP projections.
- Project and Grant projections.
- Generate a Budget Book.
- Web-enabled.
- Supports mobile devices.

Reports

- Fiscal
- Status
- Budget by time
- Ad Hoc by end uses
- Ability for non-IT staff to produce reports easily

Interfaces

- OnBase ECMS
- Open Data Portal

Staffing

- Database Administrator
- Report Developer

Benefits:

- Provide information to Council and the public.
- Better informed decisions for planning purposes.
- Ensure sustainability and fiscal strength.
- Staff time savings.
- Reduced staff stress.
- More efficient and streamlined process.
- Better comparison of trends.
- Consistent process across departments.
- Reduced errors.
- Broader knowledge across staff.
- Complete information to move forward.



- Ability to share information with departments.
- Save time, duplicate storage, and cost savings.
- Reduced PRA requests.
- Provide current and correct information.

E GOV E-Government Software

E-Government technologies provide the most significant opportunity for operational cost containment, enhancing service delivery levels and meeting growing customer expectations. Leading E-Government cities are those that evolve towards online service delivery with interactive, transactional and online services integrated with the City's financial systems. This framework maximizes the use of the Internet, enhances customer service, while at the same time reduces operating and staffing costs.

E GOV 1 Web Content Management Software

Findings:

The City Manager's Website Rapid Workflow® workshop revealed the following about the City website content management application, Ektron:

- It has editing challenges.
- It is excessively cumbersome and difficult.
- It is not user friendly and intuitive.
- It is old (have had it since 2008) and pages are failing.
- Ektron has limitations with fonts.

According to City staff, this results in the following:

- Staff time to post content and/or modifications to web pages.
- Keeps staff from updating and is not helpful to communicating with constituents.
- There are staff that could contribute to the website, but do not.

Recommendations:

- Implement a new Web Content Management System (CMS).

Benefits:

- Increase of happier staff and community members.
- Higher staff productivity.
- Greater amount of staff satisfaction.
- Reduce 311 costs.
- Cost savings.
- Staff efficiency, improved trust.
- Quality Assurance.
- People with disabilities could access information on the website.

E GOV 2 City Website Design

The input regarding the City's website was primarily obtained from:

- A high-level visual review of the City's website by ThirdWave;
- City staff online survey; and,
- The City Manager's Website Rapid Workflow® workshop.



(ThirdWave did not carry out a detailed technical assessment using a web crawler/Google Diagnostics to scan the entire website for quality issues including: accessibility; browser compatibility; broken links; legal compliance; search optimization; usability and web standards compliance, which was beyond the scope of the DSP Roadmap project.)

Findings:

- ThirdWave rates the City's website design as dated, equal to those of other cities of comparable size from 2000 to 2005.
- ThirdWave rates the City's website maturity model (functionality) equal to those of other cities of comparable size from 2000.
- The City website is focused on disseminating information to diverse members in the community as opposed to providing online services.
- The City website does not currently provide online transactional services, or if it does, we could not find them.
- There is a lack of mobile responsive design and development which makes viewing the site unfriendly on mobile devices.
- The online staff survey revealed the following:
 - The City's Website was identified as the number one technology requiring the most improvement with 42 of 233 staff/management noting the need – or 18% of all respondents.
 - When asked to rate E-government Applications to Improve Customer Service, and provided a variety of web options, Website Redesign was rated as number one, garnering 132 of 233 responses – or 56% of all respondents.
 - There were many comments related to the City's website in the online survey; the following provide typical examples:
 - *"The City website would benefit from a redesign that focuses on customer service and an intuitive design. There is great information on the website, but it's hard to navigate."*
 - *I think the City should initially focus on making the website more attractive and user-friendly, before investing time in these other areas. These web technologies could enhance outreach and be helpful particularly to certain units within the City, especially where there is a need to connect with younger residents, but overall, upgrading the website should take precedence.*
 - *"For being a contemporary municipality, it is remarkable that we do not have social media."*
 - *"Having an updated website would be a vast improvement."*
 - *"It would be great to have better, clearer web access for our community partners."*
 - *"The web site is outdated there are city employees listed as contact person that no longer work with us at least for 3 years."*
- Website issues identified by City staff:
 - The website navigation is unclear and inconsistent.
 - The layout is clean yet somewhat clutter, resulting in a Graphical User Interface that is unfriendly.
 - The site displays a poor graphical and visual design when compared to contemporary municipal websites.
 - Navigation is inconsistent across pages, and there is:
 - Home page.
 - Use of fonts.
 - Text heavy.
 - Depressing.



- The City's website does present the constituents point of view.
 - There is a lack of a clear information architecture for persons who do not work in the City.
 - There is duplicate information in several places of the website, and they may not match.
 - Website does not use responsive design.
 - Cannot search the website.
 - The lack of website e-commerce/transactional service delivery functions.
 - Template for division home pages is too text heavy.
 - Cannot print printer friendly pages.
 - Stale content:
 - The City website has approximately 15,000 pages, some which may be significantly out of date.
 - The website has had information posted for 15 years,
 - Do not update content, sometimes for decades.
 - Links are invalid because they are not updated.
 - The website is organization chart driven, not customer centric. The City thinks of the website as an internal communication tool.
- Operational issues identified by staff
 - There is a lack of ownership of the website.
 - There is a lack of staff capacity to support the website, even though departments own their sections.
 - Departments are not well versed in making the web pages' customer friendly from a visual design standpoint.
 - The City does not understand the web is meant to be a graphical interface to customers, the city lacks a web master.
 - Training provided to staff that do the posting is very short, and addresses mechanics only - not content. It does not cover ADA compliance.
 - There is a lack of quality control/preview of pages prior to posting
 - Most staff do not have HTML training.
 - There are multiple editors with no final review.
 - Low level staff with authority are in charge of putting content on the web, are overwritten by supervisors.
 - Does not address the goals to be accomplished by departments.
 - Departments, and the City as a whole, do not have someone responsible for the website.
 - Do not have time to innovate on the web.
 - The City does not have a graphic designer for the web.

According to management and City staff, this results in the following:

- Website impacts:
 - Customers cannot use the website.
 - The website is unfriendly to use for people/users.
 - Poor staff morale.
 - The lack of responsive design results in the majority of devices people use cannot access the website, which creates an equity issue.
 - The lack of website consistency, the website is not ADA compliant.
 - Paper is wasted due to problems related to printing.
 - Public perception (i.e. depressing, and embarrassing).



- Uses are not getting informed quickly or do not get information at all.
 - Impact on economic development.
 - Extra time/money for customer.
 - Public does not use the site because it takes too much time and information.
 - Calls to the City.
 - The public's trust in the website is decreased.
 - The public has to come to city for services.
 - Less dynamic website, not leveraging the software, and help desk time.
- Operational impacts:
 - Anarchy, pages do not get updated or coordinated.
 - There is no knowledge that information is valid and has poor quality control.
 - The lack of accountability.

Recommendations:

- Carry out a detailed website design assessment and use the out for the development of a Website Redesign Request for Proposal.
 - Implement a new website/website design that is customer centric.
 - Adopt a standard style guide/template.
 - Carry out a content inventory and purge outdated content.
 - Adopt responsive design.
 - Use new tools, i.e., Social Media, to foster public engagement.
- Enhance the City Intranet.
- Prioritize and fund the City Website as a primary tool for community engagement, information dissemination and online service delivery; educate executives.
- Adopt a policy that fosters community engagement.
- Articulate a governance process linked with the new CMS.
- Provide technical, ongoing role-based training to staff based on their role in interfacing with the Website. The Training should include design concepts, reference guides, content strategy, and writing.
- Establish a Website User Group.
- Hire/contract a visual designer at the City with good visual design skills and knowledge of website best practices. Work with department too.

Benefits:

- User friendly online applications and services.
- Enhanced customer convenience.
- A virtual City Hall that never closes.
- Business friendly service delivery.

E GOV 3 E-Government Applications

A number of online E-Commerce applications were identified in the course of the project; most were part of a departmental or enterprise solutions. The online staff and management survey also identified a number of online apps. Although there is no supporting data for these initiatives, as with initiatives identified in Rapid Workflow[®] workshops, ThirdWave believes they are valid and would raise the City's E-Government Maturity level.

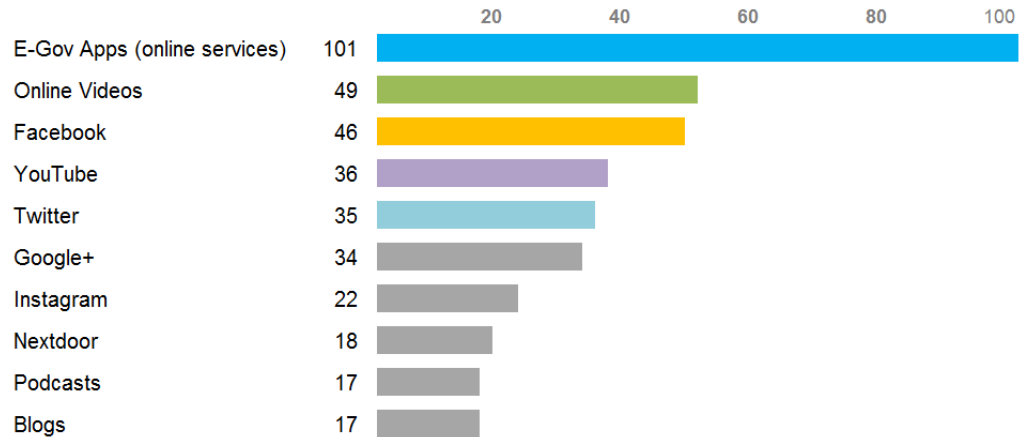
Findings:

- The City's website currently has a negligible number of E-Commerce applications.



- City staff/management identified numerous opportunities for implementing E-Government/E-Commerce applications, identified in the management interviews, City Staff Online Survey and Rapid Workflow® workshops.
- City staff responding to the online survey identified E-Government applications as the most significant web solution, as shown below, with the other top five web technologies:

Sorted Web technologies rated as a possible tool for enhancing customer service?



Recommendations:

- Adopt an E-Government Strategy posture with regards to the City's use of Internet, specifically web-enabled service delivery, i.e., use E-Government applications to deliver various on-line services to the public, tourist and business community. Use a variety of technologies, e.g.:
 - Interactive Applications (E-Forms).
 - Transactional Applications (Online Payments).
 - Integrated Applications (i.e., online applications interfaced to permitting, work order systems and/or ERP systems).
 - Social Media: Facebook, Twitter,
- Deliver information and innovative government services through web solutions to provide the highest value and convenience to constituents.
- Identify E-Government specific initiatives to raise the City's E-Government Maturity Model®.¹
- Align E-Government service delivery around the City's logical customer sets, including development permitting, parks and recreation, public safety, etc.
- Develop and roll out public facing interactive E-Government applications that compliment internal City applications provided by commercial-off-the-shelf applications or developed as complimentary applications to applications recommended in the DSP Roadmap.
- Develop and implement Web standards: Architecture, development tools, and development methods and databases for the acquisition of web technologies.
- Implement one common Content Management System. Enforce website uniformity by employing a robust Content Management Systems (CMS); provide appropriate training to all staff with content posting responsibilities.
- Adopt the use of E-Signatures tools, where applicable, to satisfy the California Electronic Signature requirements.

1. E-Government Maturity Model®: Copyright 1995 ThirdWave Corporation, see Appendix.



Public facing E-Government applications include the following:

- E Gov 2.1 Social Media:**
Recommendations:
Establish Facebook and Twitter accents and corresponding policy for producing content, editing, approving and posting it.

- E Gov 2.2 Intranet Enhancements:**
Recommendations:
This initiative should be combined with the City website redesign.

- E Gov 2.3 OED Online Loan Application:**
Recommendations:
Develop an interactive loan application and implement an online process, e.g., for Civic Arts.

- E Gov 2.4 Accela Online Applications:**
Recommendations:
Explore a number of online capabilities, e.g., Provide obtaining permit information documentation online to the public, more online submissions, and implement a policy where the public can email documents with attachments.

Benefits:
 - Improved customer service and service delivery on 7x24 self-serve basis.
 - Improved convenience to the customer.
 - Improved image of the City.
 - Easy access to information/services.
 - Improved internal efficiencies.
 - Reduce the internal use of paperwork, and its inherent costs.
 - Enhanced services and convenience.
 - Facilitate dynamic relationship with the public.
 - Reduce traffic/driving.
 - Support the City’s stated strategy to be innovative.
 - Attract residents and businesses to the City.
 - Provide real time communications for businesses/travelers who now expect it.
 - Improved use of new and emerging technologies.
 - Efficiency, public convenience, and meet public expectations.



E TECH Enterprise Architecture

E TECH 1 Cloud Solutions / Cloud Services Broker Policies

Findings:

Cloud computing came into existence in the late 1990s and became a widely used solution in the 2000's. Cloud computing allows users to benefit from shared infrastructure, software, and application technologies, without the need for deep knowledge about or expertise with each one of them. The cloud aims to cut costs, and helps the users focus on their core business instead of being impeded by IT operation obstacles.

Recommendations:

- Explore and deploy a cloud computing environment meeting the evolving needs of the City using one or more cloud computing solutions:
 - Infrastructure as a service (IaaS), providing computers, physical or virtual machines, and other resources
 - Platform as a service (PaaS), providing a computing platform, typically including operating system, programming language execution environment, database, and web servers. Application developers develop and run software solutions on a cloud platform without the cost and complexity of buying and managing the underlying hardware and software layers
 - Software as a service (SaaS): cloud providers install and operate application software in the cloud and cloud users access the software from cloud clients. Cloud users do not manage the cloud infrastructure and platform where the application runs, eliminating the need to install and run the application on the cloud user's own computers, which simplifies maintenance and support
- Prepare a rigorous specification for implementing a flexible cloud environment.
- Play close attention to the "pay-as-you-go" cost structure offered by cloud vendors.
- Carry out a pilot project to test the performance and total cost of cloud solutions.
- Monitor cloud performance.

Benefits:

- Provides tools and technologies to build data/compute intensive parallel applications with more affordable costs compared to traditional parallel computing techniques.
- Improved scalability and elasticity via dynamic ("on-demand") provisioning of resources on a fine-grained, self-service basis in near real-time.
- Possible cost reductions, by converting capital expenditures to operational expenditures.
- Device and location independence, providing access to systems / applications using a web browser regardless of location or device, e.g., PC, laptop, smart phone, or tablets.
- Easier maintenance of cloud computing applications.
- Multi-tenancy enabling shared resources/costs across a large pool of users allowing:
 - Centralization of infrastructure in locations with lower costs, e.g., real estate
 - Peak-load capacity increases
 - Utilization improvements based on system utilization levels
 - Monitored performance, with consistent architectures constructed using web services as the system interface
- Reduced risk and liability, with the use of multiple redundant sites, offering business continuity and disaster recovery.

- Potential for improved security, due to centralization of data and increased security-focused resources.

3.2.2 Operational Recommendations

The area of operational sustainability relates to the IT organization’s ability to provide the complete spectrum of services required to effectively and successfully meet the technology needs of the agency and the public. Issues related to sustainability include sufficient human resources, appropriate knowledge, skills and abilities, and the use of professional best practices commonly found in IT organizations committed to providing exceptional customer service.



The following findings and recommendations are based on input gathered throughout the DSP Roadmap project related to sustainability.

O IT Operational Improvement

O 1 Business Process Analysis/Improvement

Findings:

The need for Business Process Improvement (BPI) was specifically identified in several Rapid Workflow workshops including:

- Public Works, Refuse Billing
- Planning, Permitting
- Planning, Code Enforcement

However, it was evident that many of the City’s business processes could benefit from business process analysis/improvement as well as a technique for Information Technology requirements definition, technical specification development, IT project planning, technology procurements and implementation.

Business Process Improvement opportunities are significant for several reasons as BPI:

- Can be accomplished at little or no cost when compared to the cost of procuring and implementing technology solutions;
- Solutions can be implemented at a fraction of the time as technology with near immediate labor and cost reductions;
- Solutions, driven by stakeholders themselves, require minimal Change Management;
- BPI can substantially reduce staff workloads and streamline business processes / service delivery.

Recommendations:

- Adopt a BPI method and practice
- Provide BPI training to appropriate staff, e.g., Management Analyst, Analyst and Programmers;
- Provide BPI services to City Departments as part of all IT projects.



O 2 Cyber Security

The DSP project, and specifically the IT Focus Groups, revealed that cyber security and resiliency is a large liability for the City of Berkeley.

According to City staff this result in the following:

- Malware and ransomware are present.
- Reactive response to security risks and events
- Don't have anyone to do PCI penetration testing.
- No Security Incident Event Monitoring system in place.
- No one monitoring security logs and doing cyber risk assessment

Solutions:

- Add an FTE to the IT organization to handle this function.
- Redo class specifications for all IT staff to include scope for today's technology needs and cyber security needs to be a key element in this
- Security training for city employees (now a requirement for PCI compliance)
- Include security as a key requirement in all IT classifications.
- Implement more security tools, develop cyber security/resilience master plan.

Benefits:

- The City would be better at managing risks.
- Security damage would not be as significant as it might.
- Would be proactive in managing security risks.
- Better compliance PCI/HIPAA and DOJ requirements.

O 3 Business Continuity Plan

Findings:

The DSP project revealed that the City does not have a Business Continuity Plan. This is a city-wide challenge.

According to City staff this result in the following:

- Lack of a Business Continuity could shut down certain segments of the City.
- A recent power outage revealed that the existing generator (back-up power supply) was not sufficient for current needs. (It could only support 2 computers in 311 and 2 in Computers in Ops.) When the power went out, staff thought they could go home.
- UPS in remote sites will not last more than 1 hour.
- Inconsistent emergency operations response.
- Risk to City's Information Systems.
- Could impact service delivery.
- Could impact public safety resulting in increased liability and costs.
- Risk in the event of a disaster.

Recommendations:

- Retain a professional organization to develop a Business Continuity Plan.
- A business continuity plan (BCP) includes planning for non-IT related aspects such as key personnel, facilities, crisis communication and reputation protection, and should refer to the disaster recovery plan (DRP) for IT related infrastructure recovery / continuity.



- Verify and validate BCP to ensure its effectiveness and efficiency for recovery of City operations on a yearly basis.
- Obtain a more powerful emergency generator for City Hall.
- Backup power for building 1947 Center St.
- Develop and adopt a Business Continuity Plan

Benefits:

- Improved track-ability.
- Enhanced reporting.
- Improved customer service.
- Can show trends and justify budget and resources.
- It would allow for identifying KPIs.
- Better business continuity planning.
- Better service to the community and meeting the community needs.

O 4 Disaster Recovery Plan

Findings:

The DSP project revealed that the City does not have a Disaster Recovery Plan, including coordination/notification between EOC and IT. There is a single point of failure for the network, AT&T and insufficient battery capacity to meet the needs.

According to City staff this result in the following:

- The inability to recover systems / data in the event of a natural or manmade disaster.
- Inconsistent emergency operations response.
- Risk to City's Information Systems.
- Could impact service delivery.
- Could impact public safety resulting in increased liability and costs.
- Risk in the event of a disaster.

Recommendations:

- Develop a DR plan, in collaboration with the City Resilience and Strategic Plan. Include policies, processes and procedures to recover and ensure business continuity in regards to technological infrastructure in the event of a disaster whether manmade or natural. This might entail retaining a professional organization to develop a Disaster Recovery Plan if City IT staff lack the expertise to develop the DR Plan. Disaster recovery planning is a subset of a larger process (the Business Continuity Planning) and should include planning for resumption of applications, data, hardware, communications (such as networking) and other IT infrastructure. The disaster recovery plan should address three key control measures:
 - Preventive measures: controls aimed at preventing an event from occurring.
 - Detective measures: controls aimed at detecting or discovering unwanted events.
 - Corrective measures: controls aimed at correcting / restoring systems after a disaster.
- Integrate with EOC.
- Coordinate with Public Works.
- Adopt a formal Service Level Agreement (SLA) so IT can get Public Works engaged with a sense of urgency an SLA.
- Infrastructure upgrades: network redundancy, larger generators, more generators at remoted sites (28), and larger UPS at remote sites.
- Explore utilizing the Cloud as a backup disaster recovery site.



- Verify and validate DRP to ensure its effectiveness and efficiency for recovery of City operations on a yearly basis.

Benefits:

- Plan and be prepared in the event of disasters.
- Restoration of the business processes, systems and data recovery after a disaster occurs.
- Ensure key functions and essential services continue operating in case of a disaster and at the earliest time possible.
- Reduced liability.
- Improved public safety.
- Protect the City's assets.

O 5 Adding/Removing User Accounts

Findings:

The IT Focus Groups revealed that adding/removing user accounts in Active Directory is not well coordinated with HR and other client departments. According to IT staff this result in the following:

- Accounts remain on the network of staff who are no longer employed at the City, which creates a security risk
- Administrative overhead for IT staff not having an accurate user inventory.

Solutions:

- Create/improve the process between IT and HR in managing City staff and user accounts.
- Explore a solution that automates communication or notification between HR and IT when staff enter and leave the City. (This might be a feature provided by the new ERP system's HR module.)

Benefits:

- Better user account management in the City
- Less security risk of outdated account active on our network

O 6 Laptop Administration Plan

Findings:

The IT Focus Groups revealed that the citywide laptop inventory is aging and behind in Windows updates.

- Laptops are old and not standardized.
- Many laptops remain off the networks and do not get Windows updates.
- Laptops are not monitored, inventory is problematic.
- Laptops are not part of the enterprise replacement fund.

According to IT staff this result in the following:

- Security risk to have laptops behind in Windows Updates
- Poor performance of aging hardware leads to poor productivity
- Financial impacts, there is a high loss of hardware.
- Lack of laptop tracking to assigned employees.
- There is no encryption on the laptops, which could affect the security of sensitive City data.



Solutions:

- Add Laptops to enterprise replacement fund
- Develop and adopt a laptop administration plan for Windows Updates.
- Standardize on laptop hardware.

Benefits:

- Increased productivity for IT staff.
- Data and hardware security.
- Better inventory control and asset tracking.

O 7 Mobile Device Management

Findings

The IT Focus Groups revealed numerous challenges in managing the City’s mobile devices: Including:

- A high administrative cost to support Mobile Devices (iPhones and iPads).
- Intermittent failures sending out updates to iPhones from centralized Mobile Device Management (MDM) tool.
- Intermittent failures accessing internal App Store to install City-approved mobile apps.
- Staff often forget their iPhone passwords, resulting in a high number of walk-in support to the Help Desk.
- End user expectations vs. IT requirements

According to IT staff this result in the following:

- High call volume and walk-in support for iPhones, in particular iPhone passwords.
- Intermittent issues configuring and managing productivity apps for iPhones and iPads.

Solutions:

- Standardize the naming conventions in MDM solution for better asset management.
- Explore bringing in professional services to assess current MDM configuration.
- Explore alternative MDM solution that will sync with Active Directory.
- Staff training regarding iPhone passwords.

Benefits:

- Increased productivity for all staff.
- Reduced walk-ins and help desk tickets.

O 8 Windows Tablets Provisioning

Findings:

The IT Focus Groups revealed the following:

- The inconsistent provisioning of Windows-based tablets.
- A wide range of operating systems deployed (Win7, Win8, Win10) to a small number of Windows-based tablets (< 30).
- System Center Configuration Manager (SCCM) not optimized for Windows 10.
- The lack of IT expertise on Operating Systems beyond Windows 7 (Windows 8, Windows 10).



According to IT staff this result in the following:

- Lack of IT expertise in supporting Windows 8, Windows 10.
- Slow provisioning time for windows-based tablets.
- End user expectations vs. IT requirements.
- Security for non-Apple devices.

Solutions:

- Standardize provisioning of Windows-based Tablets
- IT Training in Windows 10
- Upgrade SCCM to better support Windows 10

Benefits:

- Improved customer satisfaction.
- Improved data security.
- Improved asset management.

O 9 City Council Live Webcam

Findings:

The DSP project revealed that there is a lack of documentation for the City Council Live Webcast. There are three parts to the system and its operation: Berkeley Community Media who films, provides the closed captioning, and decodes for sending back to the City. Granicus is responsible for the feed.

According to City staff this result in the following:

- Slower problem resolution in the event of an outage.
- Interruptions in the live stream results in delays in posting the archived webcast
- Outages result in a lack of accessibility of Council Meetings for remote constituents.
- Staff overtime to troubleshoot and resolve outages.
- Large number of complaints from constituents.
- Stress for City staff, Council, and Mayor.

Solutions:

- Document deployment diagram and common troubleshooting steps.
- Clearly outline SLAs between IT, Berkeley Community Media, and Granicus, the Video-streaming vendor.
- Research alternative video-streaming solutions. (The current system has been in place for over 10 years.)
- Review existing vendor contract for features not currently in use.

Benefits:

- More stable video-streaming environment
- Less downtime and reduced overtime costs to support and troubleshoot

3.2.3 Management Recommendations

This section of the report includes a comprehensive set of management recommendations designed to support the implementation of the City's Digital Strategic Plan over the next 5 years.

These management recommendations are based on information gained from a thorough review and assessment of the City's mission, business processes and requirements. A baseline understanding of the City's IT management issues were realized by holding interviews with all department heads at the City. Business process requirements were identified in the Rapid Workflow[®] sessions held with staff and management.



M Management

MI 1 IT Organization and Operational Model

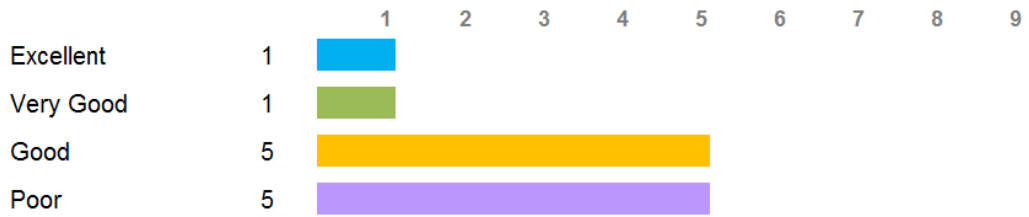
Findings:

The capacity, knowledge, skills and abilities of the Information Technology Department's ability to effectively support the City was brought up throughout the project, including:

- 5 of 26 Rapid Workflow[®] workshops.
 - City Clerk, Commissioner Tracking
 - City Attorney, Public Records Act Requests
 - Public Works, Refuse Billing
 - Office of Economic Development, Unfunded Liabilities
 - Office of Economic Development, Focus Group
- 3 of 5 IT Focus Groups
 - Software Initiatives
 - 311 Call Center
 - Operational Sustainability
- The management interviews revealed the following challenges related to staffing:
 - *“Not having enough knowledgeable and competent IT staff to support the Fire Department's systems. No one in IT knows their systems. There is no back up to the back person, and the primary persons have left.”*
 - *“Believe IT is understaffed, and is difficult to fill empty positions.”*
 - *“There is a need to revisit the IT organizational structure. Most IT staff are very good and recognize some staff with internal challenges.”*
 - *“The culture of IT is the culture of “No,” i.e. iPhones. It is an uphill battle to get things done.”*
 - *Need more project management training for staff. Database Administrator, Cyber Security Staff and Project Managers. Need to hire PMs and Cyber Security staff. Need to start looking at GIS from a holistic city-wide view vs. departmental / decentralized view. Add another GIS analyst position to Centralize GIS and create a public portal for the community.*
 - *“(Need) more direct departmental support from IT staff.”*



Management Interview Responses the Regarding of Adequateness of IT Staff Levels



The Online survey revealed the following staff feedback:

- *“Some of the folks assigned to IT are great. The level of service depends on who you get. Generally, it seems like there are not enough people in IT to keep up with the pace of technology in our City, at least in the FD.”*
- *“Simply put I feel IT doesn't support the role of the police officer nearly enough.”*
- *“I am not saying that IT does not have good staff they just need to improve their educational expertise in all these areas. They are hardworking but seems to need more competencies perhaps more certification or training. Also certain staff needs to practice better customer service.”*
- *“Need additional IT staff.”*
- *“When I call IT for support, I have received poor customer service from some of the people who answer the phone. They have given me a difficult time when I've asked for assistance with my computer running slowly, adding a printer to my work station, etc., insinuating that it was my lack of skills that were the issue. While there was nothing specifically said to indicate that, the tone of voice and overall dismissive attitude of the individual added to my negative experience.”*
- *“In general, I.T. staff seem skilled and capable; however, the quality of support varies significantly.”*
- *“All of my experiences with IT employees have been pleasurable.”*

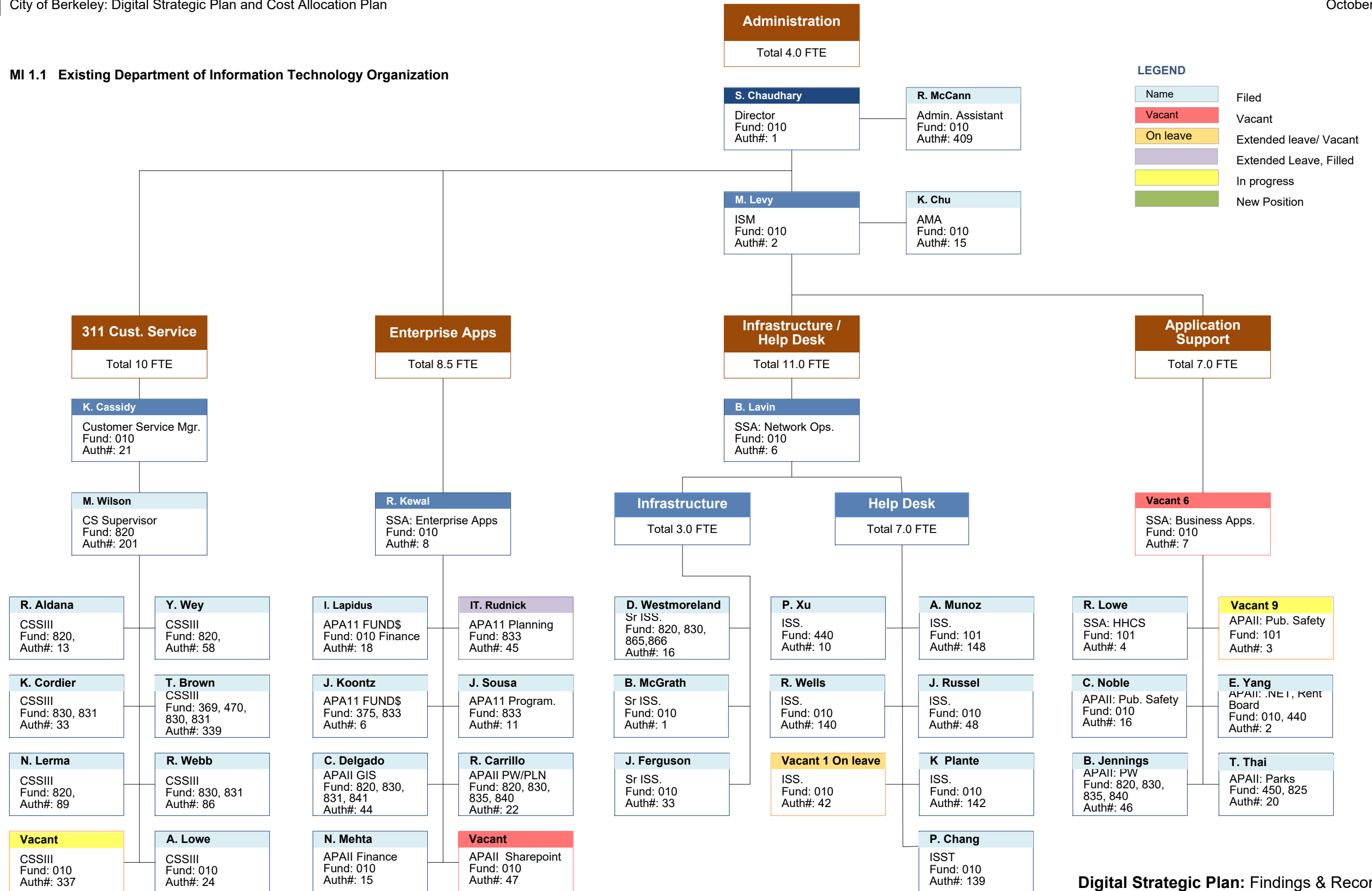
The current IT Organizational structure has 5 groups:

- Administration
- Network Operations/Help Desk
- 311 Customer Service
- Business Applications
- Programming

The figure on the following page illustrates the existing IT organizational structure.

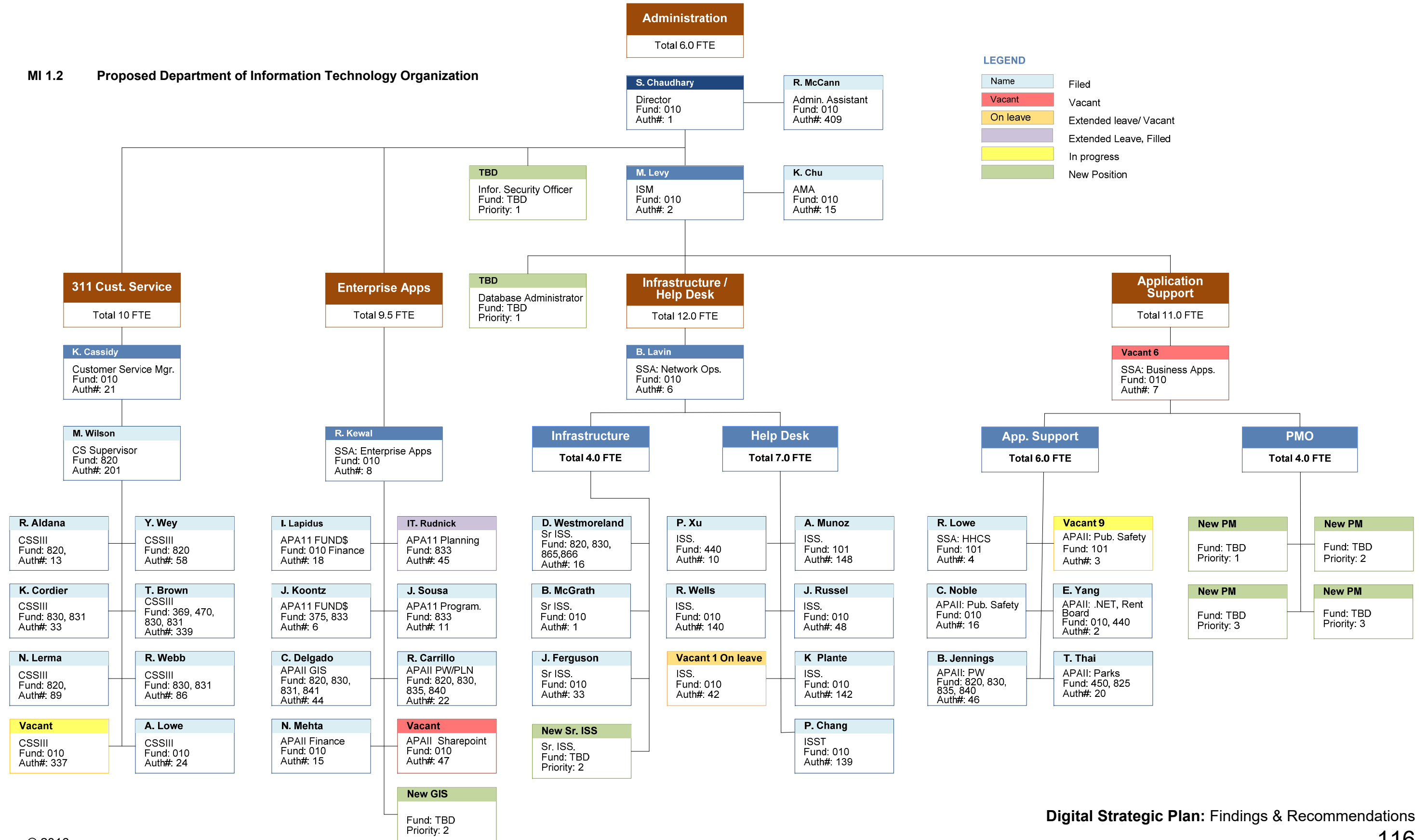


MI 1.1 Existing Department of Information Technology Organization





MI 1.2 Proposed Department of Information Technology Organization





Solutions:

- Realign the IT Organization and business model to include eight core service areas:
 - **ADMIN - Strategic Planning and Digital Communication**
 - Digital Strategic Plan
 - e-Government
 - Special Projects/PMO
 - Leadership Training/Team Building
 - IT Governance
 - Strategic alignment
 - Technology Governance Committee
 - Open Data Portal
 - Audit
 - Budget
 - Policy & Procedures
 - Procurement & Contracts
 - Change Management
 - Social Engagement
 - Performance Management and Metrics
 - Communication with Council
 - **Service Area: Security**
 - Security: Policy and Procedures
 - Security: Backup and Data Archiving
 - Security: Networking Architecture
 - Security: Risk Management
 - Security: Legal Compliance
 - Security: Disaster Recovery and Business Continuity
 - Security: Cyber / Physical Security
 - Security: End Point Management
 - Security: Patch Management
 - Security: Security Awareness Training
 - **Service Area: 311 – Customer Service**
 - Customer Service Center
 - First point of contact for Community
 - Route Service Requests
 - PRA Requests
 - **Service Area: Enterprise Applications**
 - Enterprise Applications Governance and Roadmap Planning
 - Enterprise Applications Administration, Support and Maintenance
 - Enterprise Applications Integration
 - Business Intelligence System Management
 - Master Data Management and Dissimilation
 - Systems integration with business partners, customers, and agencies
 - Enterprise Applications Security Compliance
 - System Change Management
 - Enterprise Applications support such as ERP, Work Order, Permitting and GIS
 - Records Management
 - Enterprise Document and Content Management



- GIS & Analytics
- Enterprise GIS/Cross-functional Team
- Business & Location Analytics
- GIS Business Solutions
- **Service Area: IT Infrastructure Operations**
 - Telecommunication Service - Voice/Video/Data Convergence
 - Infrastructure (Fiber, Wire, Wireless) Service and Support
 - Server and Storage Hosting and Administration Service
 - Records Retention
- **Service Area: Help Desk**
 - Help Desk Service
 - Technical Support Service
 - Data management
 - Office Automation Software Support
 - Technical Training Service
 - Onboarding
 - Client Services
 - Automated Software Deployment
 - Incident Management
 - Asset Management
 - Hardware/Software Procurement and Licensing
 - PC Replacement Program
- **Service Area: Applications Support**
 - Agile Commercial Off the Shelf (COTS)
 - Information Architecture (Database Admin/File Services)
 - Database & Cloud Solutions
 - Business & Cloud Solutions
 - User department specific applications need
 - Ongoing Application Support
 - Police, Fire & Emergency Management
 - Parks, Recreation & Waterfront
 - Library and Rent Board
 - Development Services
 - Information Platform (SharePoint/IIS & Web)
 - Cloud Computing (Cloud MGMT)
- **Service Area: PMO**
 - Enterprise Project Management (EPM)
 - Solution research, evaluation, and recommendation
 - Business, Technical and Functional Requirements
 - Work Breakdown Structure (WBS) & Scope of Work
 - MS Project Schedules
 - Budget Estimates
 - Procurement Assistance
 - Project Management Implementation (PMBOK Areas)
 - Scope Management
 - Budget Management
 - Schedule Management
 - Quality Management
 - Contract Management



- Risk Management
- Resource Management
- Integration Management
- o SaaS, Policy & Vendor Management

Benefits:

- IT Governance/PMO will ensure projects align with City's Strategic goals
- Better management of overall staff allocation of resources
- Focused tasks for each IT group
- Formal use of best practices will help with project implementations.
- Streamlined workflow with specific responsibilities
- Increased accountability.
- Higher user satisfaction.

M 2 IT Governance

Information Technology (IT) Governance is a best practice used by progressive organizations that seek to implement business controls that entail the proper planning, approving, budgeting and purchasing of Information Systems and professional services. The goal of IT governance is to support top-down (leadership) strategy and decisions and bottom-up (IT PMO) innovation and partnership that includes all the activities of the business units and aligns Information technology planning and execution with City's priorities and available resources.

IT Governance involves the adoption of formal processes, policies and practices and well defined roles of all stakeholders (staff, IT staff, City executives) to accomplish the following:

- Identify IT requirements that are responsive to the unique needs of each department.
- Specify IT solutions and required resources for the successful implementation of technology.
- Evaluate proposed projects prior to procuring Information Technologies.
- Ensure a common IT Enterprise Architecture.
- Prioritize IT initiatives and related expenditures.
- Optimize investments in IT by eliminating the procurement of duplicate technologies and taking advantage of economies of scale.

Adopting IT Governance often requires cultural change in how Information Technology and the IT Department are perceived in the organization. It necessitates adjusting the relative importance assigned to successfully implementing and supporting strategic information systems.

There is a whole body of knowledge on the ramifications of not having IT Governance. Some typical consequences are listed below:

- The IT organization lacks prior knowledge of technology procurements and finds out that they are required to support them after the fact.
- Lack of technology standards and inefficient use of limited IT funds.
- The IT staff is adversely impacted by having to support non-standard / duplicated technologies, and in some cases (because of a lack of knowledge or expertise in non-standard systems) simply cannot support those non-standard technologies.



- Adversely affects customer service, because of a lack of knowledge on non-standard systems, the customer perception of the IT organization is poor.
- IT operational inefficiencies are impacted as IT staff are required to research and support systems that do not adhere to system standards.

Findings:

The lack of IT Governance at the City came up in the management interviews and the IT Focus Groups and two management interviews. According to City staff and management, the current lack of IT Governance results in the following challenges:

- Inefficient use of staff time.
- Do not carry out formal project analysis and planning, there is a lack of coordination between project coordinators, programmers and end users.
- Departments are purchasing their own systems, which may be the wrong or incompatible Information Technologies.
- The IT Department is out of the loop on the purchase on technology.
- Incompatible technologies.
- A lack of coordination across departments.
- IT Department is not functioning as an IT Department should be functioning.
- Fosters a “silo culture” without proper representation of the IT organization’s participation, which results in missed opportunities for investing in the best IT solutions.
- Fosters a lack of understanding of IT the executive level.
- IT staff are surprised with disparate systems when they arrive.
- IT staff have to support numerous incompatible systems.

Recommendations:

- Adopt a formal IT Governance Framework providing business controls on the identification, selection, procurement and implementation of Information Technologies.
- The framework will include a new process with appropriate policies and practices in support of IT Governance, aligned with existing City purchasing policies and practices. The proposed steps in the IT Governance process will include the following:
- Participants and Activities

Step 1: Definition of Technology Requirements

Participants: Participants in the Definition of Technology Requirements will include: Department Subject Matter Experts, Client Department Head, and IT Analyst. (Requirements definition might also include assistance from technology consultants, where appropriate.)

Activities: This step will entail the definition of technology requirements and business case for the procurement of new IT in “lay-person” terms, with assistance of IT Analyst. Departments will identify business drivers and functional requirements. The following will be identified:

- Hold internal business need discussions prior to meeting with IT
- Business drivers, technical/functional requirements
- Alignment with City’s Strategic Goals
- Identify timeline
- Department staff/time commitment
- Opportunity for innovation/business case benefits
- General Scope of Work and acceptance criteria
- Funding source



Step 2: Technology Validation

Participants: CIO, IT Manager, appropriate IT Staff depending on the initiative. (Solution validation might also include assistance from technology consultants, where appropriate.)

Activities: This step will entail the IT Department validating if proposed IT initiatives meet the City's technology standards. Additionally, the following will be identified:

- Validate if proposed IT initiative meets the organization's IT standard Enterprise Architecture
- Alignment with City's Strategic Goals
- Identify constraints
- Calculate resource allocation plan
- Consider department assumptions
- Produce implementation plan: WBS/SOW, cost estimate and preliminary schedule
- If proposed project does not meet criteria, send back for alternate solutions or identify alternatives
- Look at organizational synergies/economies of scale
- Prioritize recommendations
- Prepare presentation to Executive Team, if appropriate

Step 3: Executive Team Review:

Participants: CIO, IT Management, and Dept. Representative. Given the small size of the City, and the opportunity of enhanced communications and coordination on the introduction of IT solutions, the ITGC could include numerous City departments. However, the committee should not be so large that it becomes cumbersome.

Activities: This step will entail reviewing if the proposed IT initiative has a compelling business case. Additionally, the following will be identified:

- Alignment with City's Strategic Goals
- Provide status on existing IT requests/by department
- Review costs: hardware, software, staff, and/or professional services
- Assess against funding source
- Review business case and/or cost/benefit analysis
- Compare to DSP and overall Roadmap priorities and vision
- Final prioritization
- Approve or not approve decision.

Step 4: Procurement Process

Participants: Appropriate City staff/management and vendors

Activities: Procurement process according to City policy

- Under \$3k City Manager approval not required.
- \$3k - \$25k for City Manager information.
- \$25k – \$50k formal process signed by the City Manager.
- Greater than \$50k goes through a formal process, City Council approval is required.

Step 5: City Council Review (an existing practice)

Participants: City Council

Activities: This is an existing practice that will be remained unchanged.



Step 6: IT Implementation

Participants: IT PM, IT Project Team, Dept. Staff, IT Vendor (if applicable)

Activities: This step will be different than what has been employed in the past: rigorous project management and implementation best practices will be employed. Project sponsor and participants for the proposed project will be identified for each project as appropriate, e.g., technical staff, subject matter experts, administrative staff, etc. This step will entail the IT Department and/or Vendor deploying the identified technology. The following will be done:

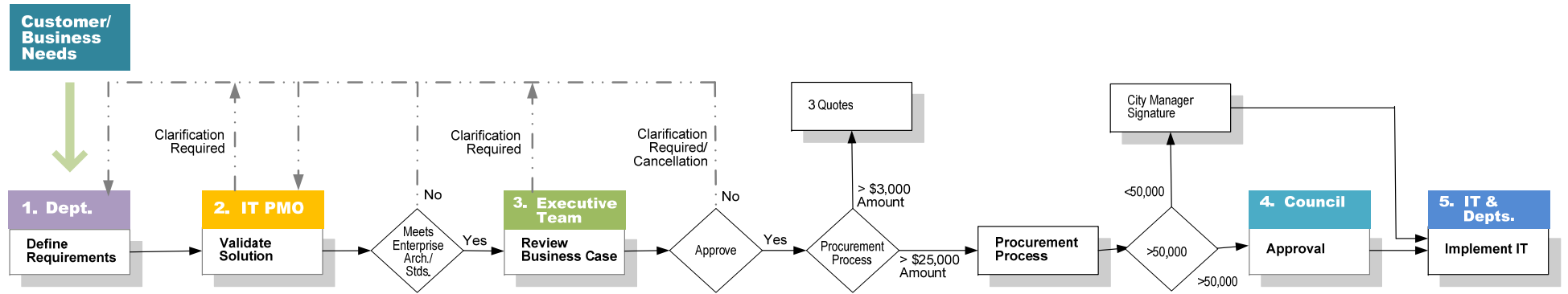
- Assign Project Manager & Project Team
- Use formal PMBOK methodology to finalize Scope, Deliverables & Schedule, Project Charter (if required)
- Develop final Resource Allocation Plan
- Execute the project
- Change Management if appropriate
- Post Implementation Assessment / Performance Measurement

IT Governance Process

The figure on the following page illustrates the proposed IT Governance process. This process may be further refined by the City as the IT Governance model is implemented.



Figure M 2.1: IT Governance Process



Participants:
Subject Mater Experts, Client Dept. Head, IT Analyst

Participants:
CIO, IT Manager, appropriate IT Staff depending on the initiative

Participants:
CIO, IT Management, Dept. Representative

Participants:
Appropriate City staff/ management and vendors

Participants:
IT PM, IT Project Team, Dept. Staff, IT Vendor (if applicable)

- Activities:**
- Identify:
 - Hold internal business need discussion prior to meeting with IT
 - Business drivers, technical/functional requirements
 - Alignment with City's Strategic Goals
 - Sponsors/customers
 - Timeline
 - Department staff and staff time commitment
 - Opportunity for innovation / business case benefits
 - General Scope of Work, acceptance criteria
 - Cost/funding source

- Activities:**
- Validate if proposed IT initiative meets the organization's IT standard Enterprise Architecture
 - Alignment with City's Strategic Goals
 - Identify constraints
 - Calculate resource allocation plan
 - Consider department assumptions
 - Produce implementation plan: WBS/SOW, cost estimate and preliminary schedule**
 - If proposed project does not meet criteria, send back for alternate solutions or identify alternatives
 - Look at organizational synergies/ economies of scale
 - Prioritize recommendations
 - Prepare presentation to Executive Team, if appropriate

- Activities:**
- Alignment with City's Strategic Goals
 - Provide status on existing IT requests/by department
 - Review costs: hardware, software, staff, and/or professional services
 - Assess against funding source
 - Review business case and/or cost/benefit analysis
 - Compare to ITSP and overall Roadmap priorities and vision
 - Final prioritization
 - Approve or not approve decision.

- Activities:**
- Procurement process according to City policy
 - Under \$5k City Manager approval not required
 - \$5k - \$25k for City Manager information
 - \$25k - \$50k formal process signed by the City Manager
 - Greater than \$50k formal process and City Council approval required

- Activities:**
- Assign Project Manager & Project Team
 - Use formal PMBOK methodology to finalize Scope, Deliverables & Schedule, Project Charter (if required)
 - Develop final Resource Allocation Plan
 - Execute the project
 - Change Management if appropriate
 - Post Implementation Assessment / Performance Measurement



Benefits:

- Allow the City to procure standard and strategic Information Technologies.
- Minimizing the risk of buying the wrong technologies.
- Take advantage of economies of scale when purchasing Information Technologies.
- Improves the IT Department's ability to effectively support the City's systems, end user operational needs and service delivery to the public.
- Aligns technology with the City's Business Strategy.

M 3 Project Management

Findings:

The DSP project revealed a substantial lack of IT Project Management knowledge, skills and abilities, policies and best practices at the City of Berkeley. This may be the most serious challenge facing the IT organization, and its ability to provide effective services and deliver existing and future projects in a cost effective manner.

- The management interviews revealed that:
 - IT has numerous, long lists of active projects, many which have been ongoing for years.
 - The definition of what constitutes a project does not follow industry best practices, i.e., the development of a Work Breakdown with phases, tasks and subtasks. And lastly, many project shown as active were never funded, therefore not qualifying as active projects.
- The IT Focus Groups revealed the following challenges:
 - Do not carry out formal project analysis and planning,
 - Project completion dates are not estimated.
 - Lack of an enterprise project management practices.
 - Lack Enterprise IT project governance.
 - No standard methodology to manage programs.
 - There is overpromising on projects.
 - Lack of transparency and visibility of project reporting.
 - Lack of project ownerships, there are so many people involved.
 - Lack of project status dashboard rerouting.
- The IT Rapid Workflow workshops revealed the following:
 - There is no enterprise project management solution.
 - The lack of project status dashboard rerouting.
 - Do not know availability of IT staff resources, there is no demand management.
 - Each person manages their projects differently.
 - The lack of consistency on how each group of projects are prioritized.
 - There is a lack of project management skill sets.
 - There is a lack of visibility into all active prospects.
 - There is a lack of management of existing/future funding.
- The online staff survey identified the following challenges:
 - *"Project Management is consistently poor -- even with mission-critical initiatives, our staff have repeatedly needed to drive projects and assume responsibilities that simply weren't being managed by the I.T. Project Manager."*



- *“Project management needs better structure.”*
- *“Project management: There is not a formal project management policy or application. Each project is run differently and each person uses different software (Excel, Outlook, Word) to manage project scope, task and milestones. Also resources (people) cannot be tracked or tasked to work on a project and this causes resources to get over allocated.”*
- *“Project management methodologies, and software to support standardized project management practices. Along those same lines, project prioritization and project resourcing.”*
- *“System implementation, lack of knowledgeable staff and lack of project management skills.”*
- *“Making promises that cannot be kept, such as unrealistic deliverable dates for project “go live”. The inability to complete projects.”*

According to City staff and management in the Rapid Workflow workshops, the current lack of IT Project Management results in the following:

- It takes a long time to complete projects or projects are not completed at all.
- Rarely complete projects on time, approximate 20% of projects are completed on schedule or budget.
- There is no way to consider department work load.
- Projects are not aligned with the city mission statement
- A lack of project prioritization, at the department and citywide levels.
- Inconsistent reports on status to council and/or management, stakeholders.
- Each IT staff manages their projects differently.
- Lack of consistency on how each group of projects are prioritized.
- Lack of management of existing and future funding.
- Impacts IT Department’s credibility, creating a less than stellar reputation with departments.
- IT projects jump from initiation into execution without proper planning phases
- Lack of IT Project Management accountability.

Solutions:

- Provide formal Project Management 101 training to all IT staff. This training should cover Project Management fundamentals, at a minimum: requirements/scope of work definition, building WBS, estimating, resource allocation, scheduling, and a high level review of the PMBOK project management areas.
- Provide formal PMBOK Training to all IT staff managing IT projects/vendors implementing IT solutions.
- Implement a Project Management Application: Adopt an enterprise Project Management /Cost Accounting tool for managing projects.

Features/Functions

- Work Breakdown Structures
- Schedule
- Resources / Resource allocation
- Staff time
- Notifications
- Dashboard



- Budgets
- Payment tracking
- Provide project management ITSM
- Reporting
- Stats

Interfaces

- Active Directory
 - Outlook
 - ERP
 - "ITSM" (DoIT replacement)
- Create Project Manager class specification, hire and promote staff with project management skillsets
 - Adopt an IT Governance process and policy.

Benefits:

- Increased project delivery on/ahead of schedule and on/or under budget.
- More efficient use of staff resources.
- Ability to make better informed decisions.
- Cost savings by not starting projects that cannot be completed.
- Align IT projects with City's Strategic goals and resilience strategy
- Improved ability to gauge project status: scope, schedule and cost.
- Improved IT and City staff morale.
- Improved IT Department reputation.
- Improved customer services, department and Council members.
- Increased social capital: improved IT Department trust and credibility.

M 4 Resource Planning: Cost / Budget Allocation

Findings:

The DSP Project revealed existing technology infrastructure is a large unfunded liability. (Lack of Internal Service Fund). The following illustrates the current condition:

- Funds do not cover network devices, wireless, VOIP phone system, UPS, fiber, wireless infrastructure and other City-wide software needs.
- There is no internal service fund to cover other technology infrastructure aside from PC desktops, servers, and existing EA agreements.
- There is no plan articulating to users what they are getting for their costs.
- There is no software where you can see what costs will be next year for end users.
- Lack of consistency with the PC/Server replacement plan, implementation and messaging.
- PC/Server replacement funds are used for other purposes when PCs/Servers are not replaced.
- Lack a system to monitor replacements.
- Lack of Technology internal service fund to support the existing infrastructure.

According to City staff and management, the current lack of an appropriate cost allocation model results in the following:

- Lack of transparency to end users.
- Budgeting is really inefficient, consistently patching instead of planning.



- Negative perception of end users, they don't feel they are getting the value.
- IT is being more reactive than being proactive.
- Lack of software asset management results in costly renewals of software agreements
- The City is running on end of life hardware, which poses risks.

Solutions:

- Adopt a cost allocation plan for infrastructure costs.
- Implement an IT Service Management tool for help desk service request tracking, software and hardware asset management
- Communicate the plan to end users.
- Internal Service Fund to support existing, and new infrastructure.

Benefits:

- Improved transparency.
- Better communication with end users.
- More efficient use of IT finding.
- Healthy stable infrastructure.

M 5 Physical Security

Findings:

The ITS project uncovered that physical security of City properties, buildings, and staff is extremely limited, for instance:

- In City Hall, the only space with a key card system is the computer room.
- The City has multiple keycard systems managing multiple buildings, and there are no after-hours monitoring of the facility, motion detectors, door monitors, or window intrusion systems. (There are cameras in the server room.)
- There is no automated way to lock City Hall down in the event of an emergency.

According to City staff and management, the current lack of physical security results in:

- Risk of vandalism and theft.
- Misuse of access to City facilities.
- Disgruntled employee could do something to City facilities and/or staff.

Solutions:

- Implement a Centralized Identification Badging System, providing active monitoring capabilities with alerts.

Benefits:

- Prevention, or stopping intrusion, damage, etc.
- Secure the assets of the City.
- Secure the safety of City staff and customers.



M 6 IT Staff Skills Assessment

The DSP project uncovered that there are significant deficiencies in IT staff's current knowledge, skills, and abilities related to various technologies and industry best practices.

According to City IT Focus Groups, staff and management identified a number of challenges with IT staff's proficiencies, including the following:

- Don't have the skills needed to address current and future needs.
- Staff feel disconnect between their value add and the City's needs.
- Technical support bottlenecks.
- Decrease in IT staff morale
- Increased IT staff turnover

City management also expressed concerns in the management interviews, identifying challenges in staff training and support provided by IT. The following are quotes provide typical comments:

- *"The IT Department is not as nimble as they could. For instance, PCI: credit cards took approximately 2.5 years to become compliant."*
- *"IT staff specifically dedicated to training FD staff do not determine who is responsible for training: IT staff, the system vendor, and/or Train-the-Trainer (T3) training."*
- *"Sometimes IT schedule systems/application software training but it does not go anywhere. IT staff do not finish the training; they don't test out of the training."*
- *"Not having enough knowledgeable and competent IT staff to support the Fire Department's systems. No one in IT knows their systems. There is no back up to the back person, and the primary persons have left."*
- *"(Need) more direct departmental support from IT staff."*

Solutions:

- Carry out an IT Staff Skills Assessment to determine current and required knowledge, skills and abilities in all areas of the IT organization. Evaluate each IT staff person's level of experience and expertise in the systems they support; identifying required training for all.
- Provide continuous IT staff training.

Benefits:

- Staff would be better able to respond to agency needs.
- Skills alignment would reduce stress and costs
- Produce more efficient IT professionals, proliferating Berkeley's positive reputation
- Increased community and end user satisfaction with IT services.
- Flexibility to work on different projects in parallel.

M 7 Change Management

Change Management is the process, tools and techniques used to manage the people-side of changed business processes and new technologies to achieve the required outcomes. Change Management ensures effective change with staff and the wider organization.

Findings:

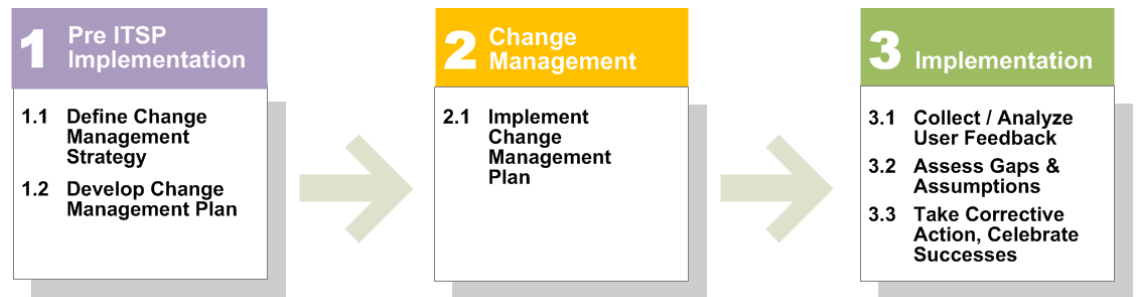
- The DSP project identified a number of technology initiatives, which if implemented correctly, will transform how City services are provided. This type of technology and

organizational change will require effective change management to ensure the highest likelihood of success;

Recommendations:

- Adopt and implement Change Management Best Practices as DSP initiatives are implemented. There are a number of Change Management models which can be considered. The one illustrated below is a common one which incorporates the key components of an effective Change Management program.

Figure M 7.1: Proposed IT Change Management Model



Outputs

- Identify sponsor structure, stakeholders roles and responsibilities
- Change Management Plan
 - Communication Plan
 - Sponsor Roadmap
 - Training Plan
 - Resistance Management Plan

Outputs

- Carry out ongoing Change Management activities

Outputs

- Compliance audit
- Correction action plans
- After action review

- Implement a formal Change Management Process, with the following activities:
 - **Sponsor Roadmap:** Identify the sponsor structure, stakeholder roles and responsibilities.
 - **Communication Plan:** Establish and execute a communication plan to support DSP initiatives; possible components could include (but not be limited to) the following:
 - Publish a DSP Newsletter posted on the City’s Intranet, highlighting current and planned IT initiatives, highlighting how suggestions made by staff in the DSP Project are being carried out. Celebrate End User and IT successes.
 - Publish a DSP Newsletter posted on the City’s Website, notify the public of planned and ongoing initiatives that will improve customer service. Celebrate E-Government success stories.
 - Establish End User Groups of newly deployed technologies.
 - Establish User Groups for Enterprise projects such as ERP, Accela, Work Order, Website
 - Encourage and recognize the participation of “Super Users” (staff who become highly proficient in the use of new technologies).



- Establish City, Community, Business, Regional Government forums to discuss ongoing and planned DSP initiatives.
- **Training Plan:** Implement the training recommendations in the DSP, formalizing an ongoing IT training program for City staff. Develop a curriculum of classes, prerequisites, and course descriptions.
- **Resistance Management Plan:** Provide feedback mechanisms for staff and management, such as:
 - Suggestion Box or User Tips on the City's Intranet.
 - End User Groups (Quality Circles) for different technologies and / or disciplines.
 - Implement the recommendation to adopt Business Process Improvement techniques where end users can work with an IT Business Analyst to identify new requirements and / or shortcomings and feed-back loops on newly deployed technologies.
 - Carryout a Post Implementation Evaluation of the DSP on a yearly basis.
 - Utilize performance measurement techniques to gauge the progress of the DSP implementation.
 - Make necessary adjustments to planned initiatives based on changing business and / or service delivery requirements.
 - Make necessary changes to planned initiatives based on changes or innovations in technology that significantly affect the return on investment.

Benefits:

Change management will allow the City to achieve the following:

- Implement a formal process for facilitating the most efficient implementation of the DSP initiatives, via clear executive sponsorship and leadership.
- Foster enterprise communication and coordination.
- Provide a mechanism to identify and address staff objections and resistance early, allowing the City to take steps to mitigate concerns and reduce risk before they become significant issues.
- Provide the highest likelihood of success.



Section 4

Appendix

4.1 Glossary

	Term	Definition
1.	Access Control	The term “access control” denotes a technique used to define or restrict the rights of individuals or application programs to obtain data from, or place data onto, a storage device.
2.	Administrator	A role responsible for the day to day operation of the corporate records management policy. The tasks attributed to Administrators may be divided between several roles, with titles such as Records Manager, Records Officer, Archivist, etc.
3.	As-Is Business Process Map	Graphical business process model used to depict the existing condition of a business process. Used for the analysis of current business process steps and activities. Typically produced with input from business subject matter experts / business process owners.
4.	Automated Workflow	The tasks, procedural steps, organizations or people, required input and output information, and tools needed for each step in a business process. A workflow approach to analyzing and managing a business process can be combined with an object-oriented programming approach, which tends to focus on documents, data, and databases. This is commonly referred to as ‘Automated Workflow.’



	Term	Definition
5.	Backbone	Another term for bus, the main wire that connects nodes. The term is often used to describe the main network connections composing the Internet
6.	Bulk Load	An automatic data import of scanned documents utilizing the indexing schema attributes for subsequent search and retrieval of electronic documents / records stored in an ECMS.
7.	Business Intelligence (BI)	Often described as "the set of techniques and tools for the transformation of raw data into meaningful and useful information for business analysis purposes. BI technologies are capable of handling large amounts of unstructured data to help identify, develop and create new strategic business opportunities. BI allows for the easy interpretation of large volumes of data. Identifying new opportunities and implementing an effective strategy based on insights, providing businesses with a competitive market advantage. BI technologies provide historical, current and predictive views of business operations. Common functions of business intelligence technologies are reporting, online analytical processing, analytics, data mining, process mining, complex event processing, business performance management, benchmarking, text mining, predictive analytics and prescriptive analytics.
8.	Business Process Improvement	Business process improvement (BPI) is a systematic approach to help an organization optimize its underlying processes to achieve more efficient results. The methodology was first documented in H. James Harrington's 1991 book Business Process Improvement.
9.	CCTV	Closed-circuit television (CCTV), also known as video surveillance, is the use of video cameras to transmit a signal to a specific place, on a limited set of monitors.
10.	Change Management	An approach to transitioning individuals, teams, and organizations to a desired future state. It focuses on how people and teams are affected by an organizational transition. It deals with many different disciplines, from behavioral and social sciences to information technology and business solutions. In a project management context, change management may refer to the change control process wherein changes to the scope of a project are formally introduced and approved.
11.	Customer Relationship Management Software	Short for customer relationship management, CRM entails all aspects of interaction a company has with its customer, whether it be sales or service related.
12.	Departmental Software	Software providing functionality specific to a department in an organization, features and functions not required by any other department. In government, an example might be a Library Information System or Police Department 911 system, both systems which no other department requires. Departmental application software solves department specific problems and may integrate with enterprise systems.



	Term	Definition
13.	DOD 5015.2	Design Criteria Standard for Electronic Records Management Applications, DOD 5015.2-STD: A DOD and NARA approved set of requirements for Electronic Records Management applications.
14.	E-Commerce	E-commerce is business that is conducted over the Internet using any of the applications that rely on the Internet, including interactive and transactional functions, e.g., online payments, registration and application submittals.
15.	E-Government	A generic term that refers to any government functions or processes that are carried out in digital form over the Internet. Local, state and federal governments essentially set up central Web sites from which the public (both residents and businesses) can find public information, download government forms and contact government representatives.
16.	Electronic Document Management System (EDMS)	Functionality to support the computerized management of electronic and paper-based documents. Associated components include a system to convert paper documents to electronic form, a mechanism to capture documents from authoring tools, a database to organize the storage of documents, and a search mechanism to locate the documents.
17.	Enterprise Architecture	A discipline for proactively and holistically leading enterprise responses to disruptive forces by identifying and analyzing the execution of change toward desired business vision and outcomes. EA delivers value by presenting business and IT leaders with signature-ready recommendations for adjusting policies and projects to achieve target business outcomes that capitalize on relevant business disruptions.
18.	Enterprise-wide	Deployment or use of a single software application throughout all departments, divisions, or components of the organization.
10.	Enterprise Content Management System (ECMS)	An automated system with the functionality to capture, manipulate, retrieve, and publish the entire inventory of digital assets (e.g., web pages, office documents, databases, scanned images, e-mail) created by an organization.
20.	Electronic Record	The information recorded in a form that requires a computer or other machine to process it and that satisfies the legal definition of a record according to section 3301 of title 44 of United States Code (USC).
21.	Electronic Records Management System (ERMS)	A collection of hardware, software, staff, policies, and procedures that work in concert to enable an agency to effectively manage records electronically. A software product that identifies, classifies, and disposes of records according to specified records disposition policies.



Findings and Recommendations

	Term	Definition
22.	Enterprise Resource Planning System (ERP)	Business management software that allows an organization to use a system of integrated applications to manage the business: e.g., Finance, Human Resources, Asset Management, Customer Relationship Management, Project Management, Business intelligence, to name a few.
23.	Enterprise Software	Enterprise applications (e.g. CRM, ERP, BI) assist an organization in solving enterprise problems. They integrate with other enterprise systems.
24.	E-Services	The concept of e-service (short for electronic service) represents one prominent application of utilizing the use of information and communication technologies (ICTs) in different areas. 'E-Service constitutes the online services available on the Internet, whereby a valid transaction of buying and selling (procurement) is possible, as opposed to the traditional websites, whereby only descriptive information are available, and no online transaction is made possible.'
25.	Ethernet	A local-area network (LAN) architecture that uses a bus or star topology and supports data transfer rates of 10 Mbps.
26.	Fiber Optics	A high-bandwidth transmission technology that uses light to carry digital information. One fiber telephone cable carries hundreds of thousands of voice circuits. These cables, or light guides, replace conventional coaxial cables and wire pairs. Fiber transmission facilities occupy far less physical volume for an equivalent transmission capacity, which is a major advantage in crowded ducts. Optical fiber is also immune to electrical interference.
27.	File Plan	A document containing the identifying number, title, description, and disposition authority of files held or used in an office.
28.	E-Forms	Program development tools that build applications by designing electronic forms for data entry, update or processing. Electronic forms are generally designed with visual programming tools that allow fields, buttons and logos to be drawn directly on screen.
29.	E-Signatures	An electronic sound, symbol, or process attached to or associated with a contract or other record and used as the legal equivalent of a written signature.
30.	Geographic Information System (GIS)	GIS is a collection of computer hardware, software and geographic data for capturing, managing, analyzing and displaying every form of geographically referenced information, often called spatial data.
31.	Image Capture (scanning)	A process whereby documents are scanned into a system and stored electronically. Imaging is the digital capture, storage, manipulation and delivery of copies of digitized originals, which may be texts, manuscripts, pictures or other information types.



Findings and Recommendations

	Term	Definition
32.	Infrastructure	An enterprise's entire collection of hardware, software, networks, data centers and facilities used to develop, test, operate, monitor and/or support information technology services.
33.	Interoperability	The ability of software and hardware on different machines from different vendors to share data.
34.	ISP	Short for Internet Service Provider, it refers to a company that provides Internet services, including personal and business access to the Internet.
35.	IT Governance	The processes that ensures the effective and efficient use of IT in enabling an organization to achieve its goals. IT demand governance (what IT should work on) is the process by which organizations ensure the effective evaluation, selection, prioritization, and funding of competing IT investments; oversee their implementation; and extract measurable business benefits. ITG is a business investment decision-making and oversight process, and it is a business management responsibility. IT supply-side governance (how IT should do what it does) is concerned with ensuring that the IT organization operates in an effective, efficient and compliant fashion, and it is primarily a CIO responsibility.
36.	ITS	Short for Federal Intelligent Transportation Systems, it is a broad range of wireless and wired communications-based information and electronics technologies that are integrated into transportation system and in vehicles themselves. ITS is made up of 16 types of technology based systems.
37.	Life Cycle	The records life cycle is the life span of a record from its creation or receipt to its final disposition. It is usually described in three stages: creation, maintenance and use, and final disposition.
38.	Metadata	In the context of records management, meta-data is the structured or semi-structured information which enables the creation, management and use of records through time and within and across domains in which they are created.
39.	Open Data	The idea that some data should be freely available to everyone to use and republish as they wish, without restrictions from copyright, patents or other mechanisms of control. The goals of the open data movement are similar to those of other "Open" movements such as open source, open hardware, open content, and open access. The term "open data" is recent, gaining popularity with the rise of the Internet and World Wide Web and, especially, with the launch of open-data government initiatives such as Data.gov and Data.gov.uk.



Findings and Recommendations

	Term	Definition
40.	Optical Character Recognition (OCR)	The recognition of printed or written text characters by a computer. This involves analysis of the scanned-in image and then translation of the character image into character codes, such as American Standard Code for Information Interchange (ASCII). OCR is applied to image (raster) files to create text-searchable files.
41.	PBX System	A private branch exchange (PBX) phone system that's delivered as a hosted service, typically by one of the major telephone companies.
42.	Portable Document Format (PDF)	This format is proprietary to Adobe Inc., and is widely used as a de-facto data exchange method.
43.	ThirdWave Rapid Workflow Process Modeling®	US Patent 8615423 B1: A method of rapid workflow process modeling, which is established according to a triangulation principle. The method integrates issues of management, operation and technology including information technology that are three fundamentals of a triangulation principle to characterize challenges and opportunities for process improvement of any organization including military units, governmental agencies and public and private business sectors. Specifically, the method is comprised of seven steps such as the As-Is process mapping, problem statements, impact statements, solution statements, benefit statements, To-Be process mapping and cost benefit analysis for generating a quantitative projection of the business cost reduction. Application of the method is able to comprehensively and effectively address challenges and opportunities for all aspects of the organizational process improvement and Enterprise Architecture.
44.	Record	The information, regardless of medium, that details business transactions. Records include all books, papers, maps, photographs, machine-readable materials, and other documentary materials, regardless of physical form or characteristics. Records are made or received by an Agency under Federal law or in connection with the transaction of public business. Records are preserved or appropriate for preservation by that Agency or its legitimate successor as evidence of the organization, functions, policies, decisions, procedures, operations, or other activities of the Government, or because of the value of data in the record.
45.	Records Manager	Individuals who are responsible for records management administration.



	Term	Definition
46.	Retention Period	<p>The length of time that a record must be kept before it can be destroyed. Records not authorized for destruction are designated for permanent retention. Retention periods for temporary records may be expressed in two ways:</p> <ul style="list-style-type: none"> • A fixed period from the time records in the series or system is created. Normally, a fixed period that follows their regular cutoff dates. For example, the phrase “destroy after 2 years” provides continuing authority to destroy records in a given series 2 years after their creation (normally 2 years after their regular cutoff date). • A fixed period after a predictable event. Normally, a fixed period following the systematic cutoff applied after completion of an event. The wording in this case depends on the kind of action involved.
47.	Retention Schedule	A plan for the management of records listing types of records and how long they should be retained by the organization for business purposes; the purpose is to provide continuing authority to dispose of, transfer, or archive records.
48.	SAN	A storage area network (SAN) is a network that provides access to consolidated, block level data storage. SANs are primarily used to enhance storage devices, such as disk arrays, tape libraries, and optical jukeboxes, accessible to servers so that the devices appear to the operating system as locally attached devices.
49.	Service-Oriented Architecture (SOA)	An architectural pattern in computer software design in which application components provide services to other components via a communications protocol, typically over a network. The principles of service-orientation are independent of any vendor, product or technology, Services can be combined to provide the functionality of a large software application. ^[3] SOA makes it easier for software components on computers connected over a network to cooperate. Every computer can run any number of services, and each service is built in a way that ensures that the service can exchange information with any other service in the network without human interaction and without the need to make changes to the underlying program itself.
50.	Taxonomy	The study of the general principles of scientific classification: systematics; classification; especially: orderly classification of plants and animals according to their presumed natural relationships. Taxonomy is a high-level, hierarchical classification for documents and records that facilitates the management (storage, access, retrieval, revision, archiving, and disposition) of recorded information throughout its life cycle. A taxonomy is a living document that changes as the work within the company changes. It is never final because organizations constantly change their content types, processes and organizational structures.



	Term	Definition
51.	ThirdWave Strategic Planning Triangulation® Methodology	ThirdWave’s Strategic Planning Triangulation methodology is a powerful technique that facilitates validation of data through cross verification from two or more sources. This is accomplished by the collection and synthesis of data from three: Management perspective (Organizational, policy and finance), Operational perspective (business process and practices), and Information Technology perspective (enterprise-wide systems). In particular, it refers to the application and combination of several research methods in the study of the same phenomenon to produce comprehensive and thorough strategies based on a compelling business case.
52.	To-Be Business Process Map	Graphical business process model used to depict the future state (To-Be) condition of a business process. Used for the design of a reengineered business process steps and activities. Typically produced with input from business subject matter experts / business process owners.
53.	Waterfall Methodology	The waterfall model is a sequential design process, used in software development processes, in which progress is seen as flowing steadily downwards (like a waterfall) through the phases of conception, initiation, analysis, design, construction, testing, production/implementation and maintenance.
54.	Web Browser	Web browser is a software application used to locate, retrieve and display content on the World Wide Web, including Web pages, images and video.
55.	Wi-Fi	Wireless-Fidelity certification mark issued by the Wi-Fi Alliance to certify that a product conforms to the 802.11b, g and a standards for WLANs.
56.	XO ISP Bandwidth	Bandwidth Shaping. The process of manipulating, managing or controlling (shaping) portions of a network connection to the outside world and determining an allowed bandwidth consumption based on types of activities. The term is commonly used in conjunction with Internet Service Providers (ISP), where it refers to a tool that is used to limit or direct bandwidth consumption by users.