



City of Raleigh
Information Technology Department
Strategic Plan
August 2011



City of Raleigh

Strategic Plan for Information Technology Services and Consulting

CONTENTS

INTRODUCTION	1
Background.....	1
CIO Remarks	3
Technology Growth	5
SERVICE ALIGNMENT	5
Service Aligned Organization.....	5
Guiding Principles and Strategies.....	8
IT Performance Management	10
Information Technology Resources.....	11
TECHNOLOGY GOVERNANCE	13
IT Governance Process	13
Enterprise Project Management Office	13
Strategic Planning Process.....	15
IRMC Strategic Goals and Objectives	16
IRMC Prioritized Objectives.....	16
APPENDIXES	21





INTRODUCTION

Background

The Information Technology Strategic Plan was produced as part of the City of Raleigh information technology strategic planning process. The departmental goals articulated in the strategic planning sessions and our strategy for achieving these goals drive the Information Technology (IT) Department. IT subscribes to customer service best practices and guiding principles that align with the departmental goals. This plan looks at the City of Raleigh's need for technology, our ability to meet those needs, and a collaborative prioritization of City technology efforts.

The fundamental goals of the IT strategic plan are to:

1. Advance technology innovation to benefit service delivery and organizational efficiency;
2. Prioritize and define efforts to achieve these goals with limited expenditure of tax revenue.

To ensure success, we must have clearly defined priorities with compelling, long-term business goals and a coherent, thoughtful plan to achieve them.

The Information Technology Department appreciates the opportunity to develop a strategic plan that promotes technology solutions in partnership with our customer departments. Together with our partners, we are using Raleigh's unique skills and capabilities to continue the tradition of excellence in the delivery of services to our citizens. We strive to meet the challenges of the 21st century with compelling new objectives as defined by fiscal and operational developments.





CIO Remarks

The City of Raleigh's expanded use of technology and growth increase the demand for advanced technology capabilities and services. As service demands and business needs become more complex, timely access to information becomes more critical. The IT Department is committed to listening and leading in the delivery of technology services and information systems that align with the City departments' needs.

In the midst of a down economy, we seek to provide technology solutions that make us more fiscally accountable and smarter in our decision-making. The Enterprise Resource Planning (ERP) financial module gives us that capability. The powerful reporting functionality provides information not available in the past. The continuation of ERP integration from a systems and work process perspective will capitalize on our investment in the ERP financial, human resource, and Customer Care and Billing systems. We will need to invest in future opportunities to integrate ERP with existing and new information systems. An example is the integration of the financial module and Periscope, the dashboard software to monitor energy consumption in City facilities.

The City of Raleigh is constantly challenged to ensure its efforts stand up to its guiding principles. Technology decisions must be conducive to improving business delivery, ensuring data security and satisfying the needs of our technology-savvy constituents. It is important to find better ways to align the business application portfolio with the City's business and market conditions. According to Gartner, Inc., the world's leading information research and advisory company, "The pressure for business to be more accountable will also assume a higher profile in the way organizations embrace and exploit the technology options available to them."

Gartner's top predictions for 2011 address some of the topics mentioned in the City's strategic planning sessions:

- The threat of online sabotage increases with the movement of data to the cloud. Online, web-based activity will continue to be in demand, thus increasing security risks. Therefore, we do not grapple with "if" it happens and plan a strategy to recover "when" it does occur. Gartner forecasts, "By 2015, a G20 nation's critical infrastructure will be disrupted and damaged by online sabotage."
- Technology users continue to consume and expect greater social and mobile applications. More individuals are accessing the Internet from personal devices that are increasingly smaller and smarter. Lightweight tablet devices are replacing heavier and more costly laptop devices. Gartner predicts, "By 2013, 80% of businesses will support a workforce using tablets." The IT Department mobile strategy focuses on enabling City staff to use their preferred technology and provide the infrastructure to support mobile devices.
- According to Gartner, "The new reality will be characterized by demand for IT professionals able to analyze, interpret and add value to a business problem, rather than merely providing the "arms and legs" to execute technical tasks." The IT Department has understood this shift for some time and has restructured our organization to be more competent in this area. The ability to understand work process and user requirements is the sought-after skill in the IT organization. The IT Department competency strategy will continue focusing on business process competencies. We are working to embody the quality business skills needed in today's IT organizations.

Gail M. Roper
*Chief Information and
Community Relations Officer*

Gartner, Inc., *Gartner's Top Predictions for IT Organizations and Users, 2011 and Beyond: IT's Growing Transparency*, Brian Gammage, Daryl C. Plummer, et al, November 23, 2010.





Technology Growth

Over the past 10 years, the use of information technology by the City of Raleigh has increased dramatically, influenced by several trends:

- **Population growth** – The population served by the City of Raleigh has increased from 276,093 in 2000 to 403,892 in 2010, or 46 percent. During this same period, the number of City employees grew from about 2,950 to 3,850, or 31 percent.
- **Reliance on technology** – In the year 2000, the City of Raleigh maintained about 35 servers. Ten years later, the City maintains about 375 servers — a ten-fold increase. This is evidence of our increasing reliance on technology to run our organization.
- **Pace of technology change** – Technology innovation is occurring at an accelerated pace. Citizens and employees increasingly use smartphones, social media and other innovative technology. Smartphones are a telling example of the pace of change. Apple’s 2007 release of the iPhone created an entirely new category of devices and quickly gained first place in market share. Google released the Android in 2009 and within six months passed the iPhone in new activations. What happens next is anyone’s guess, but it is clear that change will continue at a rapid pace.

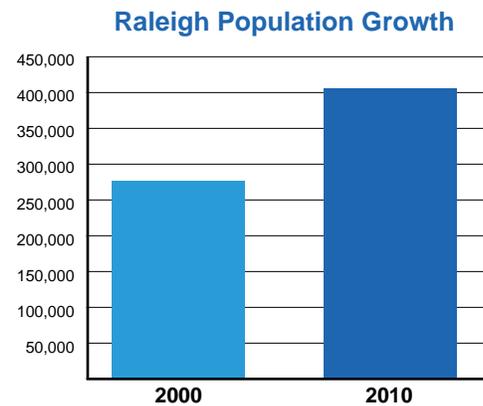


Figure 1

Emerging technology can provide expanded opportunities for collaboration, increased productivity and efficiency for City departments. Today it is more critical than ever to build an environment that fosters collaboration internally and externally, enables the mobile workforce and encourages innovative new ideas. The strength of the City organization and community increases when individuals from different perspectives and organizations collaborate on business and community issues. The IT Department must constantly reevaluate its approach to ensure that the City’s technology environment keeps pace in providing increased capabilities and services.

SERVICE ALIGNMENT

Service Aligned Organization

The IT Department’s mission is to successfully integrate people, process and technology by fostering partnerships and consistently delivering solutions that serve as the foundation of City operations. The customer and business needs drive the IT organization. To become more agile in providing technology services to business partners, IT has adopted an organizational model focused on service delivery.

Success in this service-aligned organization is dependent on a clear understanding of how City departments conduct business and the challenges they face. The introduction of the Business Relationship Manager role and the Service Catalog are important steps to help IT gain this understanding. The Service Catalog provides customers the ability to order services online using a self-service, web-based tool. Customers can see a list of available services, timeframes for service delivery, service costs, order history, and track progress for active orders. The Business Relationship Managers work closely with departments developing knowledge and understanding of their business processes, objectives and technology needs. By employing strong business skills to support equally strong technical capabilities, IT achieves a better understanding of how services are consumed by the business, how IT’s actions affect customers’ productivity, and how to provide innovative solutions. The IT Department can review and enhance its service capacity using these resources.

The IT Department measures internal processes, adopts best practices and monitors innovative trends to better align technology services with City and citizens’ needs. IT assesses its practices, services, and staff based on twenty-five competencies, grouped into eight major areas of activity. Successful performance in these areas is the foundation ensuring that IT supports guiding principles and strategic goals to align IT’s daily operations and vision with the city manager’s strategic themes and City of Raleigh mission.



Information Technology Strategic Alignment

City of Raleigh Mission

We are a 21st Century City of Innovation focusing on environmental, cultural and economic sustainability.

We conserve and protect our environmental resources through best practices and cutting edge conservation and stewardship, land use, infrastructure and building technologies.

We welcome growth and diversity through policies and programs that will protect, preserve and enhance Raleigh's existing neighborhoods, natural amenities, rich history, and cultural and human resources for future generations.

We lead to develop an improved neighborhood quality of life and standard of living for all our citizens.

We work with our universities, colleges, citizens and regional partners to promote emerging technologies, create new job opportunities and cultivate local businesses and entrepreneurs.

We recruit and train a 21st Century staff with the knowledge and skill sets to carry out this mission, through transparent civic engagement and providing the very best customer service to our current citizens in the most efficient and cost-effective manner.

City Manager's Strategic Themes

Customer Service

Neighborhood Quality

Capital Projects

Environmental Initiatives

Growth

Information Technology Vision

We promote technology to improve economic development, social growth and efficiencies in the delivery of City services as a basic citizen expectation.

Information Technology Strategic Goals

Increase Customer Satisfaction

Business Transformation

Service Delivery

Strategic Partnerships

Information Technology Guiding Principles

Standardization

Business Process Performance

Infrastructure

Innovation

Open Government

Strategic Partnerships

Community Impact

Sustainability

Information Technology Core Competencies

Vendor Management	Talent Management	Business Enablement
Infrastructure Delivery & Management		Application Delivery & Management
IT Governance	IT Performance & Value Demonstration	Security & Business Continuity Planning

Figure 2



IT Department Organization

The IT Department, led by the Chief Information Officer, provides technical solutions for citizens, City employees and various communities. The department is composed of the Technology Business Solutions Group and the Technology Solutions Group, each with two divisions.

The Technology Business Solutions Group, led by the Chief Administrative Officer, manages day-to-day operations to improve technology investment value, service and product performance, end-user satisfaction, project management, and vendor relations.

- The Business Relationship Management Division bridges the gap between City departments’ objectives and technology investments by understanding departments’ business goals and aligning technology solutions to meet them. This division also manages the technology vendor and product management program, deployment of PC equipment, technology training and software licensing compliance.
- The Strategic Resources Management Division focuses on innovative industry “best practices” technology, is responsible for the enterprise technology strategy, manages the IT Service Catalog, and provides other planning and project support. It also ensures maximum return on investment and reduces duplication of efforts in the realm of information technology.

The Technology Solutions Group, led by the Chief Technology Officer, manages the core technology infrastructure that supports daily operations of IT systems (data center, network, server, database, and storage platforms), the delivery of applications and the city web portal. The group includes support functions such as the IT service desk, quality assurance, and information security.

- The Infrastructure and Operations Division manages the City’s network infrastructure and connectivity and is responsible for the IT Customer Support Center and Network Operations Center.
- The Business Applications Support Division plans, develops, implements and maintains software systems. This division manages the City’s web portal and intranet services, is responsible for the City’s geographic data and the dissemination of Geographic Information System (GIS) technology, and designs and maintains the City’s database warehouse, including the Enterprise Resource Planning (ERP) data structure.

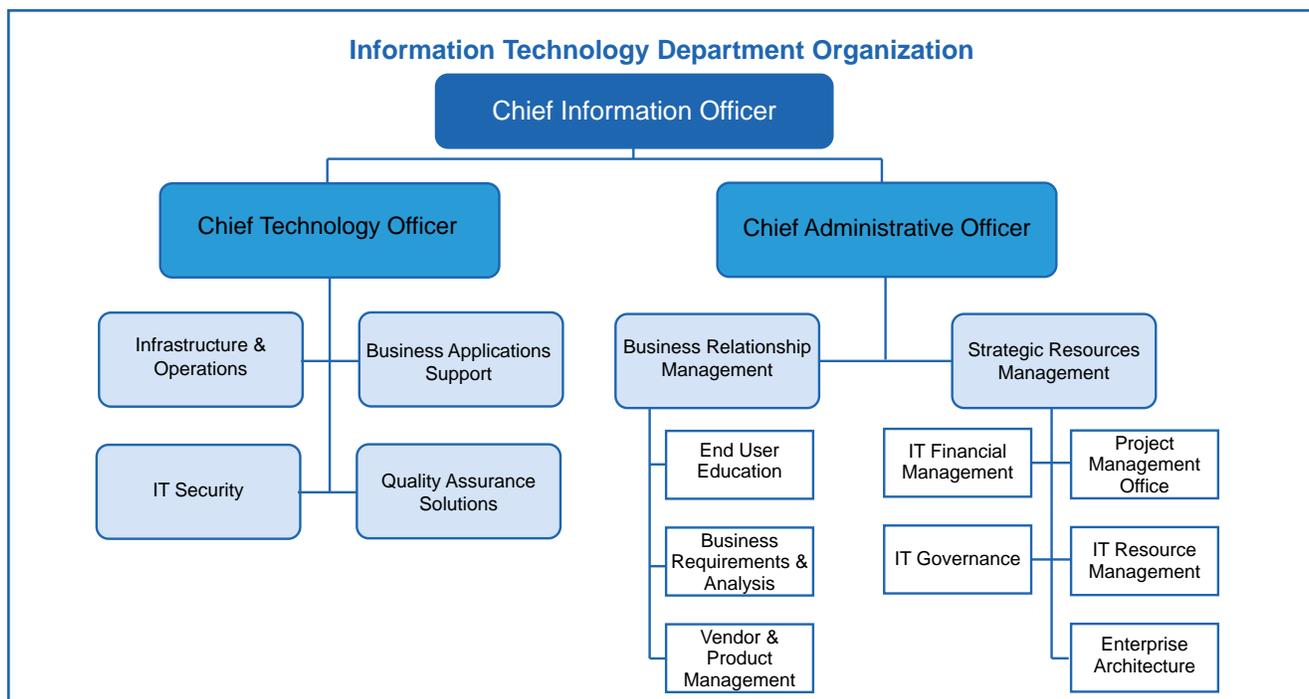


Figure 3



Guiding Principles and Strategies

The IT Department focuses on developing and embracing business and technical strategies that support the department's guiding principles.

Guiding Principle	Description	Strategies
Standardization	Standardize information technology solutions whenever possible to reduce costs and optimize information sharing	<ul style="list-style-type: none"> Utilization of commodity hardware and software emphasizing reusable components, open source, centralized management, and shared infrastructure Consolidation of enterprise databases on a single database standard and architecture Identification of technology standards for supported systems and applications to ensure adequate staff support for commercial off-the-shelf (COTS) applications
Business Process Performance	Implement information technology systems to increase business process performance through requirements, modeling and cross-functional business involvement	<ul style="list-style-type: none"> Implementation of enterprise applications supporting City financial, human resources, and utility billing needs Creation of a Center of Excellence governance and support model blending technical and business competencies to ensure enterprise applications positively impact business performance
Infrastructure	Build a technology infrastructure that is measured by its scalability, reliability, and security	<ul style="list-style-type: none"> Connection of partner organizations to the City network to enable innovative sharing of information, the creation of new partnerships, and drive economic development Deployment of a citywide fiber network to reduce ongoing vendor costs for network connectivity at city facilities, increase speed and reliability of network connections, and enable smart building management and video conferencing Implementation of WiFi at major City facilities and downtown increasing network access for city staff and citizens Implementation of a comprehensive information security program including enterprise governance, policies and procedures, and technical solutions to protect critical information assets Implementation of centralized Voice over Internet Protocol (VoIP) telephone system reducing ongoing costs and providing infrastructure that has scaled to support new facilities Creation of a centralized Network Operations Center to provide monitoring and incident response for all IT systems



Guiding Principle	Description	Strategies
Innovation	Develop new solutions for change that allow new functionality to be added quickly and easily as the business requires—ensuring today's innovation does not become tomorrow's legacy	<ul style="list-style-type: none"> • Implementation of video conferencing to allow effective meetings while reducing costs and environmental impact associated with travel between city facilities • Support of consumer devices like smartphones and tablets to allow knowledge workers to use personal technology to increase their efficiency
Open Government	Build information technology systems that ensure public trust and establish a system of transparency, public participation, and collaboration	<ul style="list-style-type: none"> • Use of GIS to enhance access and analysis of enterprise data for City departments and citizens through online tools • Implementation of tools to fulfill public records requests accurately and efficiently • Proposal of an open systems and open data resolution to the City Council
Strategic Partnerships	Develop public-private partnerships with like-minded organizations to promote solutions for the good of the community	<ul style="list-style-type: none"> • Partnerships with Cisco, SAS, Microsoft and AT&T in the construction and programming of the Saint Monica Teen Center • Partnership with Cisco to provide innovative technology to the Raleigh Convention Center to support technology-demanding conferences • Partnership with MCNC to utilize a shared video conferencing infrastructure and offsite hosting for disaster recovery while providing access to City of Raleigh fiber to enhance MCNC's mission for broadband access • Partnership with One Economy to provide free broadband access for up to 1,877 low-income homes, development and training for 60 youth through the Digital Connectors program, and digital literacy training for community residents • Partnership with nonprofits to increase residents' access to low-cost computers and technology training



Guiding Principle	Description	Strategies
Community Impact	Engage residents and other stakeholders in sustained technologies to strengthen and improve conditions in our community	<ul style="list-style-type: none"> • Creation of youth development and workforce readiness programs to provide technology training while emphasizing leadership and community service • Creation of a community advisory board to identify areas of need, and provide input on programming to enhance digital literacy, youth engagement, and economic development • Participation in citizen-led events such as CityCamp Raleigh • Utilization of a citizen advisory group to provide feedback and direction for the City of Raleigh website
Sustainability	Promote technologies, technology infrastructure, and new business models that create low emissions, save money, and leave a smaller footprint on the environment	<ul style="list-style-type: none"> • Implementation of an electronic data interchange (EDI) between City financial systems and Progress Energy, in partnership with the Facilities Management Division, to process more than 760 monthly account payments, allow for energy demand and consumption tracking and trending at the facility level, and provide data to comply with LEED standards • Deployment of a managed print solution to reduce printing, faxing, and scanning costs by consolidating to fewer physical devices to reduce energy costs and space requirements • Consolidation of multiple services on shared hardware to increase utilization, enhance environment management, and reduce energy costs and data center space requirements

IT Performance Management

The new vision for IT brings transparency of service delivery, performance standards, and costs for service delivery. Performance measures that are predictive, proactive, and strategic will drive this new vision. Predictive measurements forecast opportunities and risks that help leaders make decisions proactively. The performance measures will measure technology services important to business departments. This information in turn will form the service level agreements between IT and business departments. IT will review, revise, or establish performance measures to foster action at all levels of the organization. Every IT division will establish performance measures (if applicable) for the following categories:

- Financial Performance
- Project Performance
- Operational Performance
- Talent Management
- User Satisfaction
- Information Security



Information Technology Resources

Spending

IT operational costs have remained relatively stable since Fiscal Year 2009, with an average of 46 percent annually allocated to operations. A 5 percent year-over-year increase in IT operation costs occurred for 2010 and 2011 due to annual Enterprise Resource Planning (ERP) and Customer Care & Billing (CC&B) software maintenance costs. In addition, fluctuations in IT personnel and capital investment spending occurred due to the City's investment in ERP and CC&B systems and staffing adjustments to support these systems (see Figure 4). To understand the City's total technology costs and gain efficiencies, an in-depth study of costs and staffing is needed. At the conclusion of such study, further analysis and recommendations can be presented.

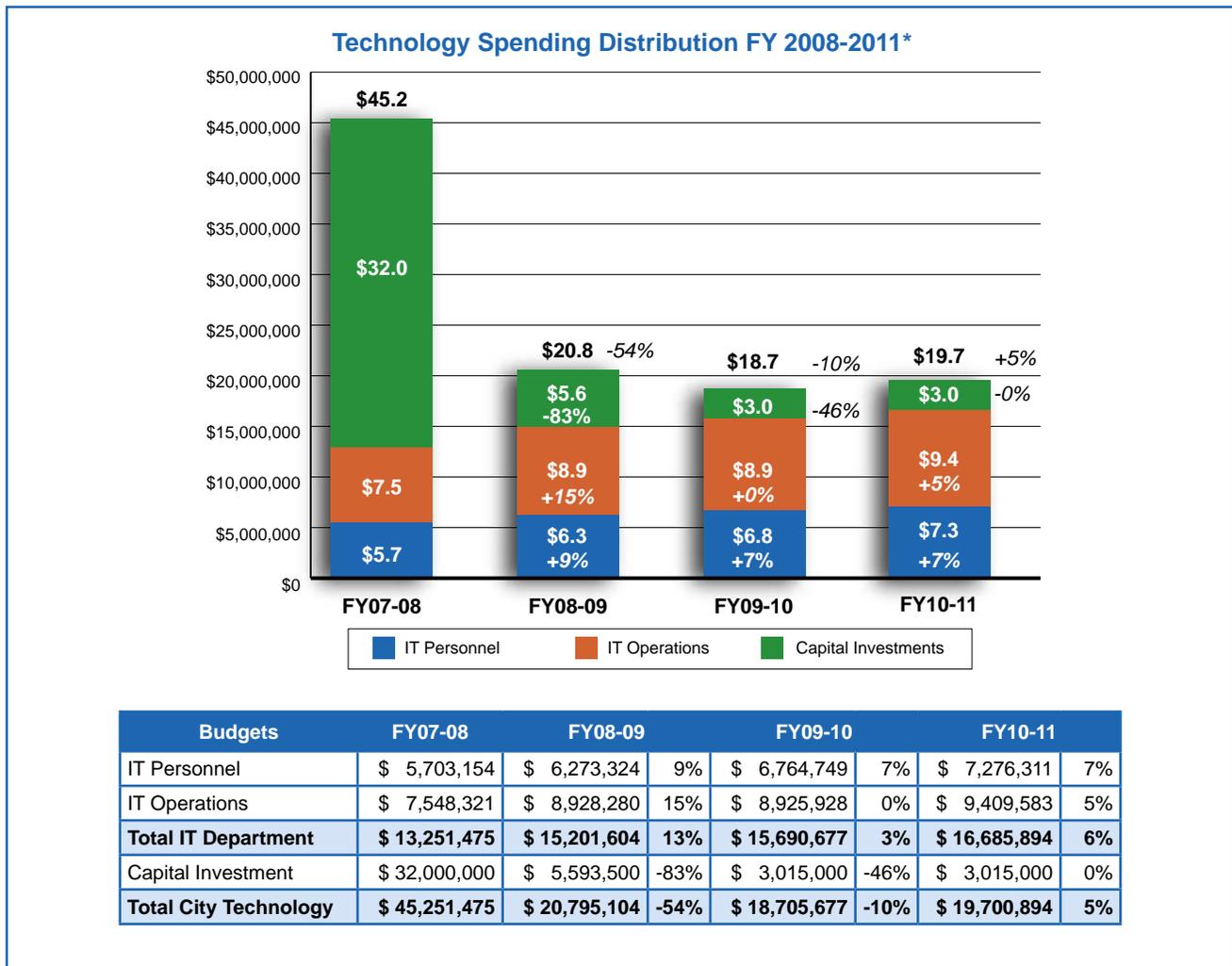


Figure 4

*Known Spending

Technology Reinvestment

The IT Department is committed to reducing technology costs. IT has consistently reduced and stabilized costs since Fiscal Year 2009. Efforts are under way to simplify the IT infrastructure, decrease the number of applications, and streamline processes. As cost savings and avoidance are realized from these efforts, the savings will be reinvested for IT improvements and innovative solutions. This reinvestment model is shown in Figure 5 on the next page.

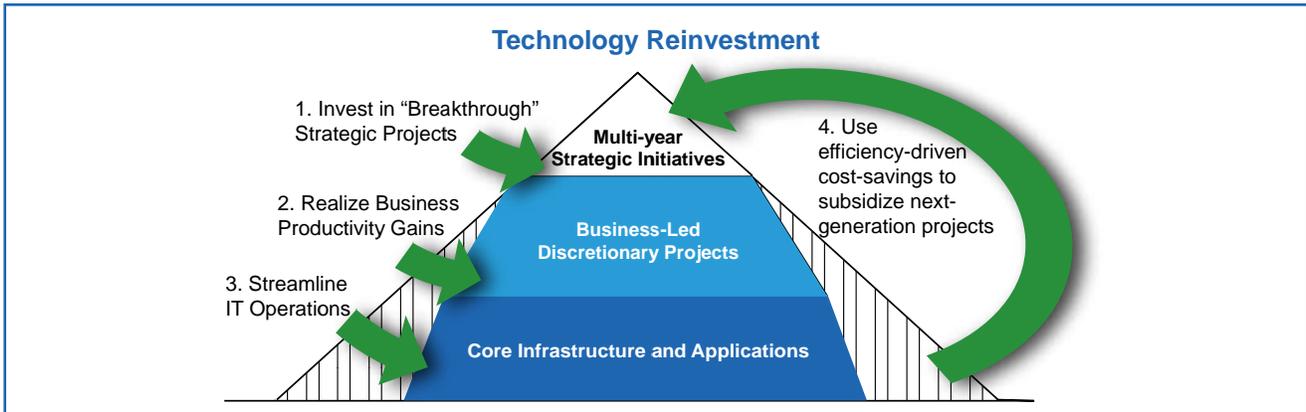


Figure 5 - Source: CIO Executive Board

Staffing

All components of the City’s technology infrastructure and application portfolios should be managed, implemented, maintained, and operated by highly qualified and motivated technology-skilled personnel with keen analytical abilities. The City faces a shortfall in technology skills and an emerging crisis in its ability to attract and retain competent and experienced technical staff. A preliminary workforce planning review found that 63 percent of IT personnel are over 40 years old as of 2011. By 2016, 17 percent of IT personnel will be eligible to retire. Competition in hiring and retaining highly skilled staff will continue to increase over the next three to four years as the growth of computer technology occupations outpaces other occupations. The City’s target architecture also increases competition for IT skills, such as PeopleSoft, Java, and COBOL programming; operating and troubleshooting Linux platforms; managing Oracle databases; developing and managing service-oriented architecture services; and developing appropriate security infrastructure. The City plans to obtain these desired skill sets through training, outsourcing, and new hires. In addition, a workforce planning study will be conducted to establish a professional development program, determine long-term staffing levels, and enhance compensation and reward programs.

Information Technology Full Time Employees - FY2008-2011			
FY08	FY09	FY10	FY11
69	74	74	78

Corporate Industry Partnerships

The IT Department has embarked on several endeavors with partners outside the City organization that promote the strategic themes of the City. IT has taken positive steps toward enhancing underfunded initiatives through partnerships with Cisco, SAS Institute, Microsoft and AT&T, all of which are admired and leading employers in the community. Additionally, IT has gathered other government agencies and nonprofits to create a shared vision for the community and to work toward common objectives. It is important to ensure that the goals of partner organizations align with the City’s interests. Examples of successful partnerships are included in the Guiding Principles and Strategies section of this plan. The IT Department must continue to find creative ways to fund initiatives through partnerships with like-minded organizations, while working within legal boundaries. IT continues to seek additional opportunities to use the strengths of private sector and other organizations to further enhance the quality of services provided and the community itself.

Public-private partnerships are an important option in times of economic uncertainty and in periods of prosperity. There is a nexus between the public sector’s needs and the private sector’s goals. Local and state governments, particularly in today’s challenging economic times, need to find innovative ways to improve infrastructure that makes sense to the taxpayers.

— Doug Domenech, Secretary of Natural Resource of the Commonwealth of Virginia



TECHNOLOGY GOVERNANCE

IT Governance Process

The Information Resource Management Committee (IRMC) was established in 2002 to provide governance for City of Raleigh enterprise technology projects. The key objectives of the IRMC are to:

- Identify opportunities for the application of information technology resources and services
- Maximize cost effectiveness and promote inter-departmental sharing of information technology resources and services
- Establish and enforce quality review and expenditure review procedures for major information projects

The IT governance process determines how the department manages demand, delivers value, and aligns with the priorities of the organization. The demand for IT services has increased significantly in the past few years. At the same time, technology and business needs have become more complex. Continuing to mature processes within the organization will provide the IRMC appropriate information to drive decisions about the use of technology to ensure organizational success.

In recent years, the IRMC has been a vehicle for reporting and updating the status of multiple projects. While there is a significant value in this, the organization will benefit by extending IT governance maturity. The evolution of IT governance will improve the ability to make solid investment decisions in major areas such as technology architecture, infrastructure and business applications, as well as to prioritize investment.

Extending the governance maturity to improve IT decisions will help determine success in the following areas:

- Ensure IT aligns with the business. IT will focus on aligning with the business and collaborative solutions to minimize redundancy.
- Ensure IT manages vital resources. IT will realize the optimal investment in and proper management of critical resources.
- Ensure IT delivers value to the business according to the business. IT will concentrate on optimizing expenses and proving value, based on the business needs.
- Ensure IT manages and mitigates risk. IT will safeguard technology assets, address disaster recovery, and ensure continuity of operations.
- Ensure IT manages performance. IT will track and monitor strategy implementation, project success, resource usage, process performance, and service delivery.

Enterprise Project Management Office

The Enterprise Project Management Office (EPMO) was established in 2004 and supports the Chief Information Officer and the IRMC in overseeing the City's portfolio of technology projects and managing the City's technology investment process. To ensure success across the entire technology project portfolio, the EPMO will adopt a tiered governance structure. This governance structure includes steering committees that vary the level of executive involvement based on the phase of the portfolio lifecycle. This governance model, in Figure 6 on the next page, will aid in strategic planning, prioritization, decision-making, project visibility, and performance measurement.



The EPMO will create a foundation for consistent technology project success throughout the City. The EPMO will initiate strategies to achieve mature project management practice including developing a strong and pervasive project management discipline and governance structure.

To achieve a mature project management environment, the EPMO will focus on four strategic areas:

EPMO Key Strategies

- **Governance Strategy** – Develop and implement governance to better manage, prioritize and strategically align projects
- **Execution Strategy** – Standardize on common tools, templates, project lifecycle framework, and systems delivery methodology
- **Tools Strategy** – Implement a project portfolio management tool that aids with resource management, demand management, project and portfolio management, and reporting
- **Skills Strategy** – Improve project execution performance by using peer mentoring and project post-mortems, matching project manager skills to project complexity, and adding contract resources to provide expertise as appropriate

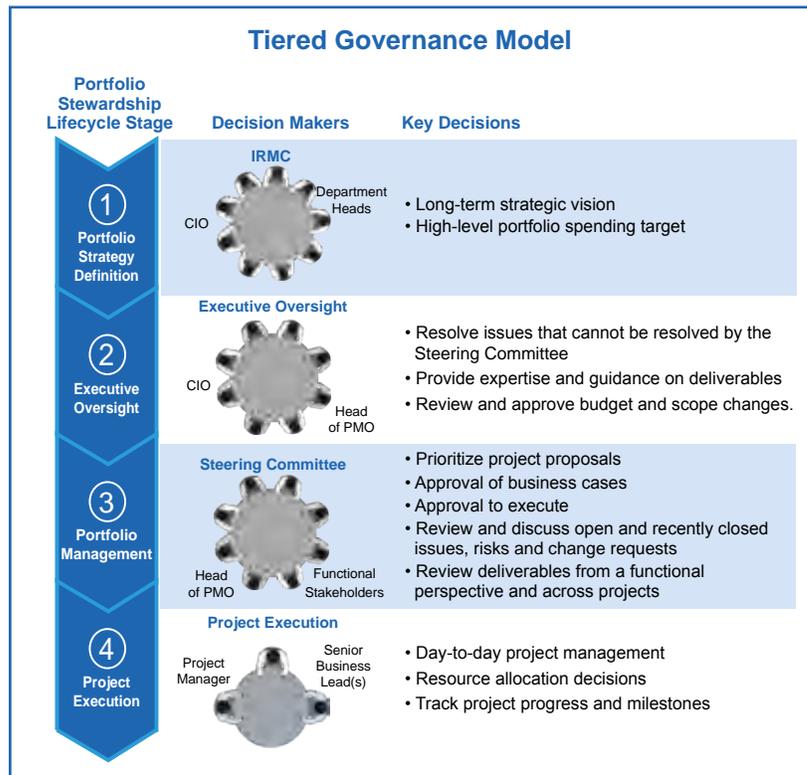


Figure 6 – Adapted from CIO Executive Board

EPMO Targets

- Implement steering committees and oversight boards for all enterprise applications and portfolio management to assist with strategic alignment of projects and transparency
- Develop standard templates and criteria for project management that include: business case, project charter, requirements matrix, test plan, change management, risk management and comprehensive communication plans
- Develop a systems delivery methodology and train project managers on how to implement it in their projects
- Ensure 100% of projects are being captured and managed through the project portfolio management tool
- Develop and implement tiered project approval and management processes base on a set of formal project criteria
- Perform project audits to ensure the system delivery methodology is being adhered to and projects are successful
- Improve project lifecycle management by implementing a stage-gate process at the end of each project phase



Strategic Planning Process

The strategic planning process and technology governance bring focus and clarity to enterprise technology decisions. The strategic planning process began with departmental interviews in which City departments were asked three key questions:

1. What are the critical success factors in delivering the services your department provides?
2. What are your department’s mid-term, one-year and two-year goals?
3. What are the barriers to achieving these goals and how do you see technology as a catalyst to achieving your success?

After the interviews, responses were documented, analyzed, grouped by similarity and objective, and validated through the IRMC. The complete list of technology requests from the strategic planning sessions is included in Appendix A. During the analysis phase, IT gathered and shared technology best practices from organizations similar to the City’s operational areas. These best practices are described in Appendix B.

The strategic planning process map, in Figure 7 below, lists the steps for developing, executing, and updating the IT strategic plan.

IT Strategic Planning Process Map

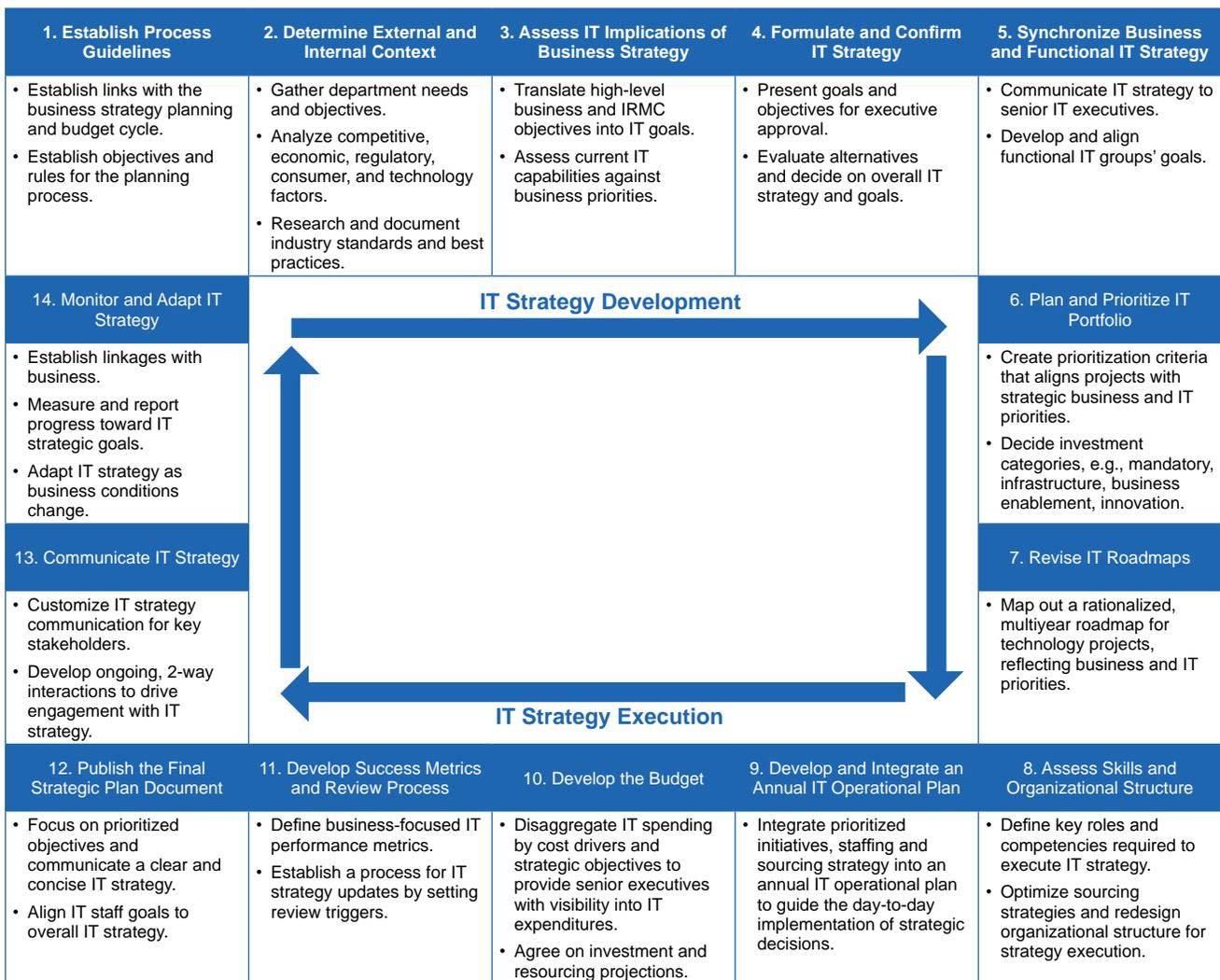


Figure 7 – Adapted from CIO Executive Board



IRMC Strategic Goals and Objectives

During the strategic planning sessions, City departments shared their challenges, needs, and plans from which the following goals and objectives were developed and adopted by the IRMC.

<p>Goal 1: Provide a platform to promote efficiencies and conduct whole lifecycle management for facilities and physical assets.</p>
<p>Objective: Enterprise Work Management Solution - Enterprise work order management systems provide functionality to automate business processes related to service requests for efficient work order creation, assignment, dispatch, resolution tracking and reporting. They can also include asset management, inventory management, and preventative maintenance.</p>
<p>Goal 2: Share and develop information with individuals across multiple departments and organizations.</p>
<p>Objective: Enterprise Content Management - Enterprise Content Management (ECM) encompasses the strategies, methods and tools used to capture, manage, store, preserve, and deliver content and documents related to organizational processes in a collaborative environment. ECM functionality includes imaging, workflow, document management, and records management.</p>
<p>Goal 3: Provide a platform to allow the business to analyze data from different perspectives to make better business decisions.</p>
<p>Objective: Business Intelligence - Business Intelligence technologies provide historical, current, and predictive views of business operations. Common functions of business intelligence technologies are reporting, online analytical processing, analytics, data mining, business performance management, benchmarking, text mining, and predictive analytics.</p>
<p>Goal 4: Promote city transparency through providing citizen access to usable, informative and auditable information and implementing tools that allow citizens opportunity to submit requests and concerns.</p>
<p>Objective: Citizen Relationship Management - Multi-channel communications to increase access to information and services improve opportunities for engagement and offer members of the community a choice in how they get their information. Channels include social media, video, online feedback mechanisms, subscription services, call center, and walk-in support.</p>
<p>Goal 5: Provide users with tools that allow them easy and secure access to systems and data from the workplace, home or en route.</p>
<p>Objective: Mobile Solutions - Mobile solutions include not only the infrastructure (i.e. broadband, wireless) to support technology while moving but also the application themselves. Mobile solutions allows you access to information from anywhere through numerous technology devices, including computer/laptop, smartphone, cell phone, and PDA.</p>
<p>Goal 6: Provide a platform to conduct whole lifecycle management for land development and planning.</p>
<p>Objective: Comprehensive Land Management - Comprehensive Land Management tracks and manages land use and community development activities including permits, building safety, inspections, investigations, reviews, zoning, project plans, code enforcement, etc.</p>
<p>Goal 7: Maximize the value of Enterprise Resource Planning (ERP) through additional modules, integration into other systems, and the implementation of features and enhancements.</p>
<p>Objective: ERP - An ERP system is an integrated computer-based application used to manage internal and external resources, including tangible assets, financial resources, materials, and human resources.</p>

IRMC Prioritized Objectives

During subsequent phases of the strategic planning process, departments prioritized their objectives. The top objectives were Enterprise Work Management, Enterprise Content Management, Enterprise Resource Planning and Comprehensive Land Management.

Meetings were conducted with departmental representatives to perform more in-depth needs assessment for each of the top objectives. A summary of business needs, goals, key strategies, targets and a high-level duration for the top objectives are included on the following pages.



Enterprise Work Management

The greatest Enterprise Work Management (EWM) needs identified in stakeholder interviews are the ability to send work orders across departments and easily check any work order status. A strong need was also expressed for attaching content (documents, images, etc.) with the work order, calculating costs associated with completing a work order, and enhancing reporting capabilities. The need for an enterprise-wide system that aids in inventory management, asset-tracking, and preventive maintenance was mentioned repeatedly.

Throughout the stakeholder interviews, it was clear that Cityworks is the work order system of choice. Departments would like to continue moving forward with additional implementations of Cityworks as well as replace the current implementation of Hansen.

GOALS

- Automate business processes
- Reduce paper, reduce carbon footprint
- Provide real-time mobile access to data
- Improve monitoring and control through on-demand reporting
- Gain efficiencies by better resourcing and tracking and scheduling work
- Reduce time to upgrade and improve version consistency with web-based Cityworks

KEY STRATEGIES

- **Technology Strategy** – Upgrade to an enterprise license which includes moving to a web-based version of Cityworks
- **Governance Strategy** – Develop governance to provide an operational and content centric foundation for scalability, increased quality, and collaboration across organizational boundaries
- **Execution Strategy** – Define, analyze, and design process flows by function rather than department where applicable to increase productivity, transparency and business intelligence

TARGETS

- Develop and implement an EWM steering committee to develop the governance needed to support an enterprise application, including prioritization of projects
- Complete a request for proposal which includes business process assessment, and enterprise implementation strategy for Cityworks
- Implement phase I priorities determined by the steering committee

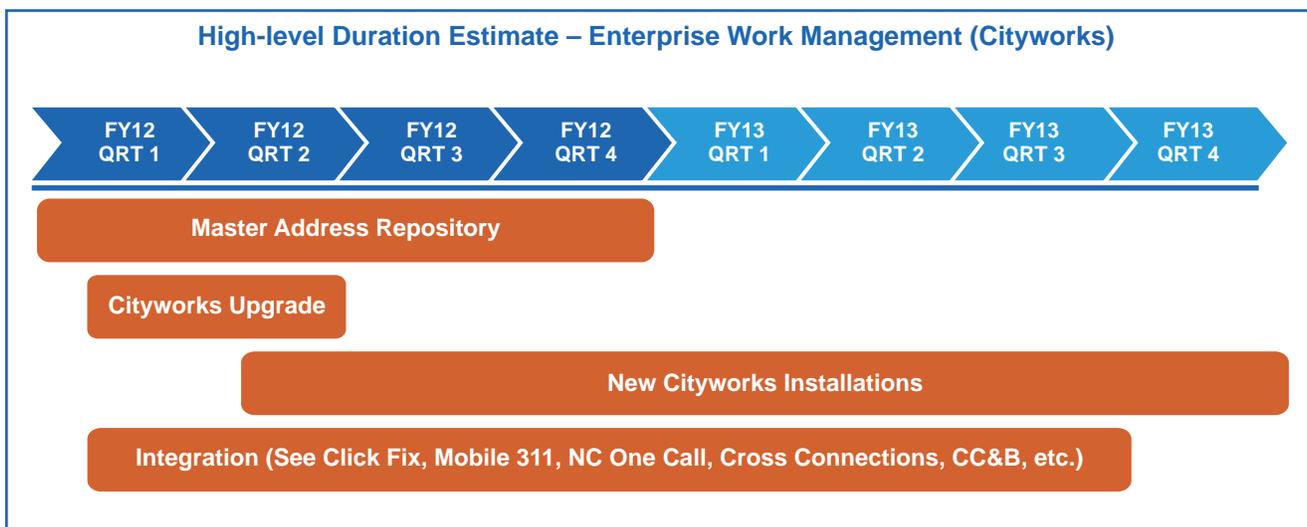


Figure 8



Enterprise Content Management

The greatest Enterprise Content Management (ECM) needs identified in stakeholder interviews are the ability to store, share, and easily retrieve content (documents, maps, and images). These items are the document and image-processing components of ECM. Stakeholders constantly mentioned inefficiencies and lost time due to the amount of physical paper generated and consumed by the City. Because the City is extremely paper-intensive, it often takes days to search through boxes to find a document. A best practice strategy to maximize the return on investment is to deploy only the most important aspects of ECM that map to the greatest needs. Based on stakeholder interviews, research, and trends the recommendation is to elicit detailed requirements for an image processing application that leverages the City’s multifunctional printers and a document management solution.

GOALS

- Create greater transparency
- Reduce paper, reduce carbon footprint
- Increase communication and collaboration
- Gain resource efficiencies
- Maximize content reuse

KEY STRATEGIES

The goals will be achieved through the following key strategies:

- **Technology Strategy** – Select ECM solution through identification of gaps between current and future states of technology infrastructure with careful consideration to leveraging existing technology investments
- **Governance Strategy** – Develop a governance structure to provide an operational and content centric foundation that facilitates growth, increases quality, and improves collaboration across organizational boundaries resulting in content that is more customer/user centric, better managed and maintained
- **Execution Strategy** – Deploy only the most important aspects of ECM that map to the greatest needs of the organization, executing a phased implementation strategy
- **Communication Strategy** – Standardize on a set of common workflows, templates, and common language definition, providing a foundation to promote information sharing and collaboration among departments
- **Search Strategy** – Reduce the time-intensive search for physical document and mitigates the risk of non-compliance when responding to open records requests

TARGETS

- Complete a request for proposal which includes an information inventory assessment, business process assessment, technology assessment, information model and security roles definition, implementation strategy, and solution recommendation
- Develop and implement an ECM steering committee to begin developing policies, processes, roles and organizational structure needed to govern information across the enterprise including retention policies
- Procure and implement recommended solution
- Implement Phase I highest prioritized items

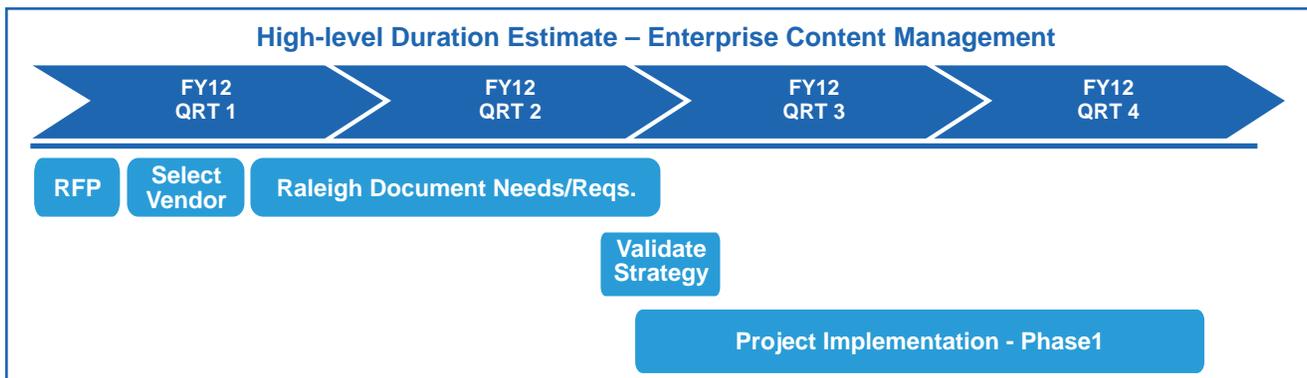


Figure 9



Enterprise Resource Planning (PeopleSoft)

The greatest PeopleSoft needs identified through the stakeholder interviews are the ability to create an online job-posting site for the City that enables applicants to apply for jobs and helps departments process applications efficiently. A strong need was expressed for an on-boarding process/module that streamlines the process enterprise-wide. Additional needs were expressed for automated time entry for temporary employees, a training system to ensure better compliance and track training history, and a better contract management system.

GOALS

- Enhance efficiency through self-service recruit to hire process
- Increase manager self-sufficiency
- Increase communication, collaboration and transparency
- Reduce paper, reduce carbon footprint

KEY STRATEGIES

The goals will be achieved through the following key strategies:

- **Technology Strategy** – Upgrade our existing PeopleSoft modules to the current release, revalidate the system’s stability, and address desired business needs by implementing additional modules already procured and expand the use of current functionality to additional employees
- **Governance Strategy** – Decision-making and management of the work will be governed by the PeopleSoft Center of Excellence already in place
- **Execution Strategy** – Analyze and standardize the City’s recruiting and hiring processes where no overriding business need requires differences

TARGETS

- Complete a request for proposal which includes an organizational readiness assessment, business process assessment, and implementation strategy recommendation
- Implement PeopleTools upgrade
- Implement candidate gateway/talent acquisition management module
- Implement Financials upgrade

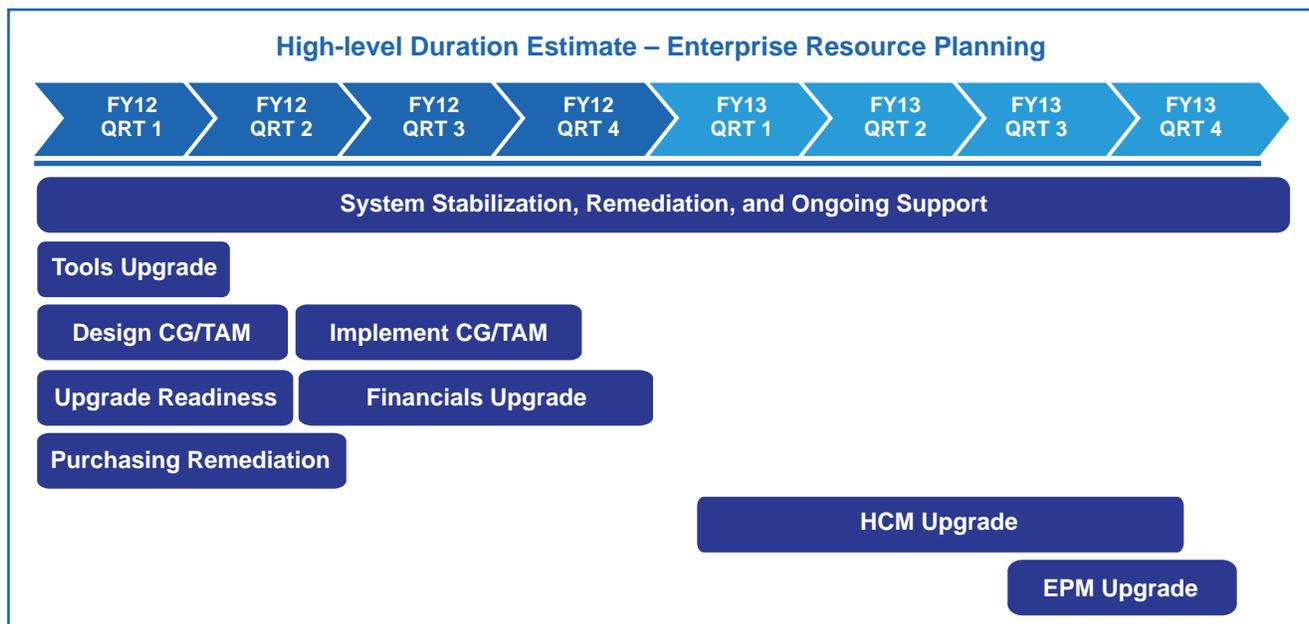


Figure 10



Comprehensive Land Management

Comprehensive Land Management tracks and manages land use and community development activities including permits, building safety, inspections, fire prevention, investigations, plan reviews, zoning, electronic project plans, complaints, violations, code compliance, and economic development.

The greatest need for the system is to provide a seamless integration of all land development activities described above, regardless of their business origination, in a hierarchical, systematic and rational basis, where GIS-based location identification links all activities for a parcel of land.

GOALS

- Gain greater efficiency in review and approval of land development activities
- Provide greater public access to all land development information
- Provide greater interconnectivity between business units involved in review, approval and inspection of land development activities
- Improve business intelligence through better collection of data on land development activities, enabling greater analytical capacities
- Flexibility, configurability and scalability that enables timely responses to business needs, while empowering user community to continuously create, evolve and enhance business processes

KEY STRATEGIES

- **Governance Strategy** – Develop a governance structure to provide an operational and content centric foundation that facilitates growth, increases quality, and improves collaboration across organizational boundaries resulting in content that is more customer/user centric, better managed and maintained
- **Technology Strategy** – System must align with technology strategies by being web-based, non-proprietary and open architecture

TARGETS

- Issue a request for proposals for a technology solution that includes software and services for business need assessment, deployment strategy, developer training, application development, data migration, and implementation

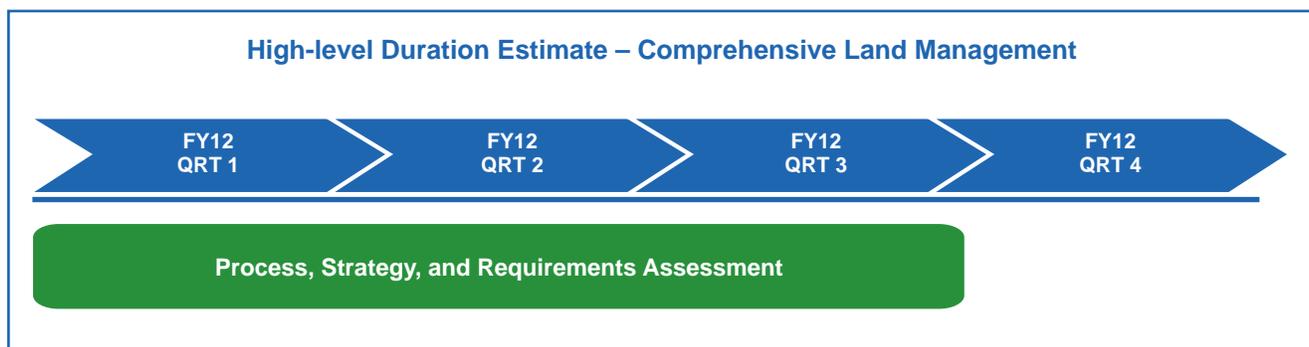


Figure 11



APPENDIXES

- Appendix A** Department Requests from Strategic Planning Sessions
- Appendix B** Technology Best Practices Summary



APPENDIX A

Department Requests from Strategic Planning Sessions

Department Requests Table

Appendix A

Reported Need	Fire	Police	Emergency	Communications	Community Services	Community Development	Finance	Administrative Services	Parks & Recreation	Planning	Inspections	Dev. Services	Public Utilities	Public Works	Solid Waste Services	City Manager	City Council	City Clerk	Public Affairs	Convention Center	Personnel	City Attorney (opt out)
Enterprise Work Management																						
Manage and maintain large inventories of public assets													X	X	X							
Asset Management												X	X	X	X							
Workorder for printing																			X	X		
Print job approval process with costs																			X	X		
More robust web portal to be more responsive to citizens																X	X	X				
Workorder system call center													X	X	X							
Enterprise 3-1-1																X	X					
Workorder system												X	X	X	X	X	X	X	X			
Asset management system									X													
Cityworks expansion									X				X	X	X							

Department Requests Table

Reported Need	Fire	Police	Emergency	Communications	Community Services	Community Development	Finance	Administrative Services	Parks & Recreation	Planning	Inspections	Dev. Services	Public Utilities	Public Works	Solid Waste Services	City Manager	City Council	City Clerk	Public Affairs	Convention Center	Personnel	City Attorney (opt out)
Document, image, workflow, routing, and records management									X	X	X	X	X	X	X	X	X				X	
Implement electronic plans management										X	X	X										
Contracts Management										X						X	X	X				
Public Meeting Management (documents, issues, agenda, distribution)										X	X	X						X				
Preparation of reports, studies, internal analysis mapping tools										X	X	X										
Development review software										X	X			X	X							
Centralized data retention system that is supported by IT								X														
Access to data across departments																					X	
Records Management																	X					
Improve information-sharing with other City of Raleigh departments					X	X																
Implement new Unified Development Ordinance (UDO)										X	X	X							X			
Update print and design infrastructure/software																			X			
Enhance city-wide awareness and support of sustainability values and practices								X														
Access to information									X													
Meeting and presentation management tools																						

Enterprise Content Management

Department Requests Table

Reported Need	Fire	Police	Emergency	Communications	Community Services	Community Development	Finance	Administrative Services	Parks & Recreation	Planning	Inspections	Dev. Services	Public Utilities	Public Works	Solid Waste Services	City Manager	City Council	City Clerk	Public Affairs	Convention Center	Personnel	City Attorney (opt out)
	Business Intelligence																					
Gathering and dissemination of critical information 24 x 7	X	X	X						X													
Long Range Infrastructure Planning													X	X	X							
Large Capital Improvement Programs													X	X								
Records Management System (RMS)		X								X	X											
Shared information, Data Integration & Real Time reporting					X																	
Predict load on City services						X																
Data driven decisions based on business intelligence/analytics of the City's data represented through Dashboards.																						
Real-time energy data management, tracking, and display capability								X										X				
Interface, integration, and compatibility with other systems		X	X				X			X	X	X										
Attendance & box office trends, forecast data usage needs																				X		
24x7 use of crime intelligence center																						
Snapshot of information for planning/forecasting			X																			
Performance management						X																

Department Requests Table

Reported Need	Fire	Police	Emergency	Communications	Community Services	Community Development	Finance	Administrative Services	Parks & Recreation	Planning	Inspections	Dev. Services	Public Utilities	Public Works	Solid Waste Services	City Manager	City Council	City Clerk	Public Affairs	Convention Center	Personnel	City Attorney (opt out)	
Business Intelligence	Enhance our business intelligence capabilities: implement City-wide model for performance measurement and management that is best-suited to our organization							X			X												
	Research, analysis, trend forecasting, visualization of scenarios, and communication of possible outcomes									X	X												
	Demand driven planning for system upgrades			X																			
	Web statistics					X																	
	Tool for tracking and reporting housing projects					X																	
	Capital planning, budgeting tool								X								X						
	Demographic and trend analysis tools									X		X											
	Development and adoption of Comprehensive Carbon/GHG Reduction Strategy							X															
	Data driven decisions based on analytics																X						
	Access to data across department																X						X

Department Requests Table

Reported Need	Fire	Police	Emergency Communications	Community Services	Community Development	Finance	Administrative Services	Parks & Recreation	Planning	Inspections	Dev. Services	Public Utilities	Public Works	Solid Waste Services	City Manager	City Council	City Clerk	Public Affairs	Convention Center	Personnel	City Attorney (opt out)
Program registration, applications, payments and RSVP			X	X																	
Citizen feedback – tracking of requests								X										X			
Improve website content																					
Improve communication internally and externally								X													
Provide 24/7 customer access to all Development Services related information and services									X	X	X										
Use of tools to allow subscription signups for constituency groups surrounding specific issues or plans, along with broadcast communication techniques									X	X	X										
“Green Marketing” principles								X													
Understanding issues of importance to the citizens through better feedback tools																					
Electronic payments							X														
Mobile Apps							X														
Smart phone applications								X													
Targeted customer communication tools/methods									X	X	X										
Social media								X	X	X	X										

Citizen Relationship Management

Department Requests Table

Reported Need	Fire	Police	Emergency Communications	Community Services	Community Development	Finance	Administrative Services	Parks & Recreation	Planning	Inspections	Dev. Services	Public Utilities	Public Works	Solid Waste Services	City Manager	City Council	City Clerk	Public Affairs	Convention Center	Personnel	City Attorney (opt out)
Citizen Relationship Management	Integrated communication platform (email, web, social media, video, subscriptions, feedback)			X	X			X	X	X											
	Web form/application for filing a larceny report	X																			
	Enhanced strategy and capacity for more effective and coordinated public communication						X														
Video Conference					X																
Online application for loan products					X																
Increase communication both internal and external/outreach							X														

Department Requests Table

Reported Need	Fire	Police	Emergency Communications	Community Services	Community Development	Finance	Administrative Services	Parks & Recreation	Planning	Inspections	Dev. Services	Public Utilities	Public Works	Solid Waste Services	City Manager	City Council	City Clerk	Public Affairs	Convention Center	Personnel	City Attorney (opt out)
Public WiFi								X													
Internal WiFi								X													
Smartphone applications								X													
Improve Performing Arts Center infrastructure																			X		
Upgrade and replace Civic Center technology and systems																			X		
Increase bandwidth for RTN streaming																					
Implement Mobile 3-1-1												X	X	X							
Provide access to fire hydrant, building information, etc to the people in the field	X																				
Mobile applications					X			X													
Enhances wireless access for field staff									X		X										
Employee mobility improvements																					
Next generation 911			X																X		
Position UHF Radio system as final emergency fallback incase County system fails			X																		

Mobile Solutions

Department Requests Table

Reported Need	Fire	Police	Emergency Communications	Community Services	Community Development	Finance	Administrative Services	Parks & Recreation	Planning	Inspections	Dev. Services	Public Utilities	Public Works	Solid Waste Services	City Manager	City Council	City Clerk	Public Affairs	Convention Center	Personnel	City Attorney (opt out)
Comprehensive Land Management							X														
Replace Blue Skies																					
IRIS enhancements												X	X	X							
Visualization tool, 3D modeling									X	X	X										
Portal interactive mapping									X	X	X										
Enhance GIS functionality for all development attribute data									X	X	X										
Centralized real estate tracking inventory							X														
Land management software									X	X	X										
IRIS replacement									X	X	X										

Department Requests Table

Reported Need	Fire	Police	Emergency	Communications	Community Services	Community Development	Finance	Administrative Services	Parks & Recreation	Planning	Inspections	Dev. Services	Public Utilities	Public Works	Solid Waste Services	City Manager	City Council	City Clerk	Public Affairs	Convention Center	Personnel	City Attorney (opt out)
Candidate Gateway																					X	
Lack of process, analysis, financial, and technical training					X			X														
Employee time tracking application				X																		
Professional management and technical skills training for staff				X																		
Maximize ERP								X														
Implement Learning Management System (LMS - ERP)									X												X	
Stabilize ERP implemented modules and install additional enhancements critical to financial reporting							X															
PeopleSoft access for part-time employees									X													
Grants management				X				X	X													
Performance Module																						
Complete Treasury modules							X														X	

ERP

Department Requests Table

Reported Need	Fire	Police	Emergency	Communications	Community Services	Community Development	Finance	Administrative Services	Parks & Recreation	Planning	Inspections	Dev. Services	Public Utilities	Public Works	Solid Waste Services	City Manager	City Council	City Clerk	Public Affairs	Convention Center	Personnel	City Attorney (opt out)
Locating sustainable resources (infrastructure)								X														
Locating critical building information	X																					
Main building vital information	X																					
Interface into GIS for tax information							X															
GPS intergration and routing software														X								
Park Locator (GIS)									X													
Locate fire hydrant information	X																					
GIS integration													X									

Department Requests Table

Reported Need	Fire	Police	Emergency	Communications	Community Services	Community Development	Finance	Administrative Services	Parks & Recreation	Planning	Inspections	Dev. Services	Public Utilities	Public Works	Solid Waste Services	City Manager	City Council	City Clerk	Public Affairs	Convention Center	Personnel	City Attorney (opt out)		
Database	Database of resources and connections of community member, ABCD Model			X																				
	Replace Minority Women Business Enterprise database (MWBE)							X																
	Access database training								X															
Security	Protection of assets (cyber security)		X																					
	Achieve PCI compliance								X															
	Security (video, surveillance, network)								X															
Network	Increase network capabilities to Fire Stations for monitoring and alerting		X																					
	Resolve connectivity issues with Barwell Road		X																					

Department Requests Table

Reported Need	Fire	Police	Emergency Communications	Community Services	Community Development	Finance	Administrative Services	Parks & Recreation	Planning	Inspections	Dev. Services	Public Utilities	Public Works	Solid Waste Services	City Manager	City Council	City Clerk	Public Affairs	Convention Center	Personnel	City Attorney (opt out)
Incompatibility of HUD system with City system					X																
Expand Class software								X													
Electronic Payments (EDI)								X													
Implement Chem Tracker								X													
Enhanced project management tools									X		X										
Replace ticketing system																			X		
Upgrade Event Booking Management Software (Ungerboeck)																			X		
3-1-1 System			X																		

Application

Department Requests Table

Reported Need	Fire	Police	Emergency	Communications	Community Services	Community Development	Finance	Administrative Services	Parks & Recreation	Planning	Inspections	Dev. Services	Public Utilities	Public Works	Solid Waste Services	City Manager	City Council	City Clerk	Public Affairs	Convention Center	Personnel	City Attorney (opt out)
Reduction in non emergency 911 calls	X	X	X																			
New Building		X																				
System upgrade due to Lightner Building delays			X																			
Building improvements (HVAC, security, space, etc)			X																			
24x7 IT support of critical systems									X													
Improve lighting and audio for Council Chambers																			X			
Address CCB deferrals after Go-Live; i.e. credit collections							X															
Continued installation of numerous emerging technologies, including solar and other renewables, electric vehicles and charging stations and supporting infrastructure								X														
Maximize electronic efficiencies in CCB							X															

Other Projects



APPENDIX B

Technology Best Practices Summary

BEST PRACTICE TRENDS

<u>PUBLIC SAFETY BEST PRACTICE TRENDS</u>	<u>3</u>
MORE U.S. LOCAL GOVERNMENTS TURNING TO 311 CALL SYSTEMS; 911 CALLS DROP SHARPLY WITH 311 USE SURVEY SHOWS	3
NATIONAL IMPACT OF 311	3
<u>COMMUNITY SERVICES AND COMMUNITY DEVELOPMENT - BEST PRACTICES TRENDS</u>	<u>4</u>
GOVERNMENT-TO-CITIZEN COMMUNICATIONS: UTILIZING MULTIPLE DIGITAL CHANNELS EFFECTIVELY	4
USING TECHNOLOGY TO PROMOTE TRANSPARENCY IN CITY GOVERNMENT	5
<u>PARKS & RECREATION - BEST PRACTICES TRENDS</u>	<u>6</u>
AN INFORMATION COMMUNITY CASE STUDY: WASHINGTON, D.C.:	6
<u>FINANCE & ADMINISTRATIVE SERVICES - BEST PRACTICES TRENDS</u>	<u>7</u>
CITIZEN DASHBOARD FOR BOND AND CAPITAL IMPROVEMENT PROJECTS (CIPS)	7
KENTUCKY'S <i>OPEN DOOR</i> WEBSITE	7
<u>DEVELOPMENT SERVICES, PLANNING & INSPECTIONS - BEST PRACTICES TRENDS</u>	<u>8</u>
VIRTUAL BERLIN, AND URBAN 3D MODELS FOR PLANNING AND ENGAGEMENT	8
URBAN PLANNING AS COMPUTER GAME IN BOSTON'S CHINATOWN	9
SCOTTSDALE, AZ: THE BIG MAP	10
INTERACTIVE TECHNOLOGIES IN PARTICIPATORY PLANNING: A GUIDE FOR SOMERVILLE COMMUNITY CORPORATION	10
<u>PUBLIC WORKS, SOLID WASTE, PUBLIC UTILITIES- BEST PRACTICE TRENDS</u>	<u>11</u>
SAN DIEGO, CA ENTERPRISE ASSET MANAGEMENT	11
BOSTON: CITIZENS CONNECT IPHONE APPLICATION	11
<u>CITY MANAGER & CITY COUNCIL OFFICES-BEST PRACTICE TRENDS</u>	<u>12</u>
JOHNSON COUNTY, KS RECOGNIZED FOR LEGISLATIVE INFORMATION MANAGEMENT SYSTEM (LIMS)	12
<u>CONVENTION CENTER, PUBLIC AFFAIRS & PERSONNEL-BEST PRACTICE TRENDS</u>	<u>12</u>

ONLINE TICKETS HELP FRESNO, CALIF., GET CONCERT MONEY QUICKLY	12
NEW VIDEO TECHNOLOGIES ENHANCE GOVERNMENT EFFICIENCY, TRANSPARENCY AND ACCOUNTABILITY	13
ONLINE APPLICATION PROCESS SUPPORTS CITY'S ENVIRONMENTAL INITIATIVES	14

GOVERNMENT TRENDS **14**

NASCIO 2010 STATE CIO SURVEY RESULTS FOR TOP TEN TECHNOLOGY PRIORITIES FOR 2011	14
GARTNER'S 2011 LIST OF TOP 10 TECHNOLOGIES AND TRENDS:	15

Public Safety Best Practice Trends

More U.S. Local Governments Turning to 311 Call Systems; 911 Calls Drop Sharply with 311 Use Survey Shows

Forty-two percent of U.S. local governments have either implemented a centralized customer service system (15%) or are considering adopting one (27%), according to a 2007 national survey conducted by ICMA, the premier local government leadership and management organization. Funded by The Alfred P. Sloan Foundation, the survey documents implementation of customer service systems and how jurisdictions use them to respond to citizen needs and strengthen community-constituent relations.

Centralized customer service systems, such as 311 call centers, provide the public with easy access to their local governments by allowing them to report loss of water service, stray animals, potholes, and other non-emergency situations without tapping into overburdened 911 systems. These systems also provide critical data on what residents need and want from their local governments.

Among jurisdictions responding to the ICMA survey that measured non-emergency calls to 911, **43%** reported a significant **decrease** in such calls following implementation of a centralized customer service system.

National Impact of 311 (U.S. Department of Justice, Office of Community Oriented Policing Services. November 8, 2007)

Baltimore, Maryland

The first city to have an operational, non-emergency number, Baltimore's 311 system resulted in a reduction of 911 call answer time (50%), abandoned calls (50%), and police calls dispatched to field units (12% between September 1996 and September 1999). One of the many benefits experienced by citizens in Baltimore as a result of 311 "was giving the public a ready source of knowledge to answer their questions regarding police policy and procedure." (Baltimore Police Department, Final Reports, 2000 and 2005).

Rochester, New York

In 2003, almost 40% of the total crime reports generated in the city of Rochester were being taken through the 311 system. The system was heavily utilized during local emergencies such as a train wreck, ice storm, and the massive power outage of August 2003. Rochester police "were able to reduce the load on 911 by providing citizens a number to call to request information, get numbers for gas and electric crews, provide updates on the situation, etc." (Sergeant Dan Holmsten, Rochester City Police Department, 2003)

Austin, Texas

Launched 6 days after September 11, 2001, Austin Police Department used 311 to field questions about terrorism and anthrax scares. Between October 2001 and October 2002, officer response time to Priority 1 calls decreased from 9 minutes, 7 seconds to 7 minutes, 32 seconds and between September 2001 and September 2002, non-emergency 911 calls decreased by 37%.

"311 has been a miracle. It has been a godsend for us. 311 saved us not only from having our 911 system swamped but saved our citizens who had true emergencies, such as heart attacks and crimes in progress, from getting a busy signal." Ed Harris, Deputy Director Technical Services Austin Police Department

Charlotte-Mecklenburg, North Carolina

The Charlotte-Mecklenburg 311 system provides a measure of redundancy to the 911 Communications Center. The 311 system has decreased 911 call volume, allowing 911 staff the time to accompany police officers to community meetings, where they educate citizens on the use of 911 emergency lines. The establishment of 311 has also fostered consideration of new organizational objectives:

"Attending community meetings is just part of what the Communications Division Director looks to accomplish with a lower call volume. Perhaps of greater importance, will be more involvement with community oriented policing initiatives...The Director's vision is that his dispatchers will work with officers in the assigned Patrol Divisions, using the SARA model, to develop workable solutions to problems occurring in their respective Divisions." (Charlotte-Mecklenburg Police Department COPS Progress Report, 2005)

Houston, Texas

Between 2001 and 2002, Houston experienced a 14% drop in non-emergency 911 call volume.

Community Services and Community Development - Best Practices Trends

White Paper: Government-to-Citizen Communications: Utilizing multiple digital channels effectively (June 2010)

(Excerpt) Government Communication Today

In order to engage with citizens today, it is important for government to communicate in new ways, keep the message clear, and make information easy to get. However, technology is only an enabler and not the solution. Integration of the various online tools for access to services and information is needed to make the most out of the web. Online tools are an essential precondition for engagement, but quantity does not mean quality. Active promotion and an integrated approach to managing digital channels is key to effective communication and engagement.

Effective communication will lead to better engagement with citizens and eventually increase website usage and demand for other lower cost digital channels.

An integrated platform for reaching the public more effectively

We know email is not dead. We know social media channels such as Twitter, Facebook and YouTube are used widely and are growing in popularity. We know governments face challenges to tie these channels together to ensure a uniform message, and they need to look for ways to reduce costs. They need to do more with less.

What sort of platform will be able to address these issues, reaching the public more effectively than current methods?

There are a few criteria's that need to be fulfilled in order for a digital communications platform to be effective. Proactive public communication systems that provide automated alerts are expected to offer the following functionality:

1. It must allow website visitors to subscribe to information of specific interest to them, creating a personalised portfolio of a government agency's information.
2. The subscribers information can be anywhere on the web for example, the government website, YouTube, DirectGov, Twitter, Facebook, Flickr, Blogs etc.
3. Whenever content changes on any of these digital channels, it automatically sends multi-channel messages alerting them of new or updated information, encouraging subscribers back to the updated content.
4. Users should be given options for subscribing to other related government information. Like one-stop shopping, a citizen should be able to easily sign up for additional government information (for example: the Met Office offers topics from the Department of Energy & Climate Change, Highways Agency, and the Driving Standards Agency upon signup).

One solution that is gaining considerable momentum in both the UK and USA is GovDelivery. GovDelivery allows government to efficiently manage multiple communication channels in order to proactively communicate with the public.

Conclusion:

By utilizing simple and cost effective Web 2.0 methods to communicate and engage with citizens, government are able to not only save money but cultivate better relationships with citizens as a result of more frequent, consistent and measurable communication. Collaborative networks play an important role in how government agencies can work together to deliver better public service and offer greater value to citizens.

To overcome challenges when it comes to communicating with citizens Government must have proactive public communication which includes:

- Allowing citizens to customize their information so it is easier to consume and manage.
- Delivering that information in a timely manner to encourage trust and confidence in government.
- Giving citizens the opportunity to share, discuss and collaborate where possible.

Full White Paper: [Government-to-Citizen Communications: Utilizing multiple digital channels effectively](http://www.scribd.com/doc/32362140/Government-To-Citizen-Communications-Using-Multiple-Digital-Channels-Effectively) (<http://www.scribd.com/doc/32362140/Government-To-Citizen-Communications-Using-Multiple-Digital-Channels-Effectively>)

Using Technology to Promote Transparency in City Government

A Joint Publication by the National League of Cities and the Public Technology Institute (July 2010)

<http://www.nlc.org/ASSETS/1BE77210BCB844B0B7308D6F66AF2FA1/Using%20Technology%20to%20Promote%20Transparency%20in%20City%20Government.pdf>

(Excerpt) With a national push toward a more —open government, || transparency is fast becoming more of the rule than the exception. Transparency – simply put – is becoming more open to the public in terms of decisions that are being made and how work is being done. Cities around the country have been employing various methods to increase transparency in their day-to-day practices for years now. From broad engines of information like city websites to more focused tools that display a city's expenditures, cities have been looking for ways to better

engage their constituencies. Transparency helps make cities more accountable to their constituents. Informing citizens of key decisions and the reasons behind them actively engages the citizenry and promotes the concept of the whole community becoming more closely involved in city decision-making processes.

eNotify

San Carlos, Calif. Population: 27,238

The City of San Carlos is using technology as a tool to provide a variety of information to its residents. As one of the first cities in the world to create a city website, San Carlos has been continually innovating its approach to informing and engaging constituents. One of the city's most recent tools is an e-mail listserv called —eNotify. || This service allows residents and business owners to sign up for a variety of types of information, ranging from general city news to local project newsletters and updates to local meeting agendas and minutes. By the end of 2009, the listserv had more than 8,000 subscribers accessing almost 60 different types of information from the city.

My Neighborhood Map

Seattle Population: 598,541

The City of Seattle created the —My Neighborhood Map || tool for its residents to access information about a variety of city services. The tool is unique in that it eliminated the need for users to sift through multiple departmental websites to get to the information they are looking for.

Started in 2006, the program consists of three types of information: services (information on libraries, parks and property parcel data), impacts (notices that affect one's ability to get around such as construction projects or during fire department response to calls) and statistics (current and a 10-year history of major crimes by Census tracts). The map includes information on 15 city departments, as well as the public school system, hospitals and recreational entities, such as farmer's markets, art galleries and museums.

Since its launch, the —My Neighborhood Map || interface has been updated to allow users to use their mouse to manipulate the map — clicking and dragging to move the map, double-clicking to zoom, and moving panels to increase the size of the map. These new features have not only made accessing information easier, but it also allows them to see what else is going on in the city that may be of interest to them.

Parks & Recreation - Best Practices Trends

An Information Community Case Study: Washington, D.C.:

(Excerpt) What sets Washington apart from most other cities, however, is its municipal broadband network. The District of Columbia has one of the country's first municipal fiber networks.⁴ Known as DC-NET, it connects over 300 public buildings, including schools, libraries, government buildings, and recreation centers, and unlike most cities, the D.C. government, not a commercial service provider, owns the infrastructure of this network. The municipal government owns and operates 338 miles of fiber with 118 miles aerial fiber. As part of the municipal network, wireless access extends service within limited proximity from public

buildings with at least one wireless hub in every ward. In terms of capacity, the DC fiber network is using about 30 percent of its 10 GB potential capacity.⁵

D.C.'s fiber network has been tapped for other uses, as in one instance in which it was used to provide Internet access to a conference of nonprofits.⁶ (The New America Foundation's Open Technology Initiative is currently working with the DC Office of the Chief Technology Officer to expand on their extensive fiber infrastructure to build a hybrid, open source-based, wireless mesh network. This effort will expand on other DC community run wireless projects in Columbia Heights and Greenbelt neighborhoods to a community and municipal collaboration in the neighborhood of Bloomingdale, in Northwest Washington, DC.) (Full Case study: <http://www.newamerica.net/publications/policy/services>)

Finance & Administrative Services - Best Practices Trends

Citizen Dashboard for Bond and Capital Improvement Projects (CIPs)

Public Technology Institute 2009-2010 Technology Solutions Award Winner

Mesa, Ariz. Population: 463,552

Easily accessible information about bond projects maintains a city's accountability, answers questions about the projects and provides overall support for funding for capital projects, many of which rely on bonding mechanisms. But most importantly, citizens can learn how their money is being spent and be part of their city's development process. Mesa provides a variety of options for its citizens to access information about results of their bond votes, project status and financial data and interactive updates.

Due to the appeal of interactive mapping capabilities, the city created a dashboard Web application for citizens that offers a variety of features, including status of the approved bond package and projects it involves, charts displaying each project status and money spent to date and browsing features of bond projects with links to more information and pictures.

Each project outlines the intended work with either pictures of the actual state of construction or the initial design documents and concept. Interactive maps are available to drill down by region of the city to understand the variety of efforts and navigate to the specific project of interest. Information is updated automatically from city CIP financial programs as the project moves from design to construction to completion — with both a project status and funds spent to date financial update. (Full document: [Using Technology to Promote Transparency in City Government](#))

National Association of State Chief Information Officers (NASCIO)

2010 Open Government Initiatives Finalist

(Excerpt :) Kentucky's *Open Door* website (www.OpenDoor.ky.gov) is a "one-stop" portal for statewide transparency and accountability. The benefits of *Open Door* have been substantial. The site has created administrative efficiencies for public information requests, improved financial reporting, and provided significant savings for the development of the state stimulus website. Most importantly, advancements in transparency allow for increased civic

participation, increased trust, and more responsiveness and fiscal responsibility in Government, which benefits all Kentuckians.

Open Door provides detailed access to budget, tax credit, revenue, and expenditure information; there is a searchable database of line item expenditures and contracts, with pdf. copies of current contracts; a search is provided for state employee salary information; and, there are extensive links to audits, American Recovery and Reinvestment Act information (Kentucky at Work), tax incentive information, unclaimed property, election finance, executive branch ethics and much more. Records on the site are refreshed frequently, all expenditure and contract records are updated twice daily, and salary data bi-monthly; in total the site hosts over four million records extending over three fiscal years. (For more information: <http://www.nascio.org/awards/2010awards/#categories>)

Development Services, Planning & Inspections - Best Practices Trends

Virtual Berlin, and Urban 3D Models for Planning and Engagement

July 13, 2010 (<http://planningpool.com/2010/07/data/virtual-berlin-urban-3d-models-planning-engagement/>)

Want to explore the urban form of London or Berlin but lack the time or plane ticket to visit in person? 3D models of real cities are coming online for exploration and interaction. Besides fun for virtual tourists, the models inform innovative planning applications.

Anyone who has ever modeled a building in AutoCad or Google Sketchup can attest that modeling an entire city sounds impossibly time-consuming. However, thanks to new technologies in data analysis, processing, and remote sensing (from airplanes! with lasers!) basic 3D urban data can now be generated automatically. This makes the 3D modeling of large areas technically feasible, although still prohibitively complex. The first entire city to be made available on Google Earth in 3D was Berlin, Germany. Created by the State of Berlin's Senate Department of Urban Development and a host of partnering organizations, Virtual Berlin integrates diverse 2D and 3D data for its basic model, as well as detailed photorealistic information about selected buildings. Check out the flythrough video here:

<http://planningpool.com/2010/07/data/virtual-berlin-urban-3d-models-planning-engagement/>

Perhaps the most exciting planning applications of 3D urban models like Virtual Berlin are for communication and engagement. A 3D model can visually communicate potential outcomes of planning or development proposals, or the location of amenities. Virtual Berlin is already in use for economic development by the Berlin Business Location Centre, which aims to attract new business to the city. The model maps available commercial real estate and local contacts in particular industries.

3D models can also facilitate more complex engagement through video game-style interactions. For instance, a recent master-planning process for Boston's Chinatown launched a multiplayer computer game in which participants assume the roles of Chinatown residents. Immersed in the 3D environment of Participatory Chinatown and working towards goals like finding housing or

employment, players comment on proposed development sites. One of its creators, planning professor Eric Gordon, describes the game as “innovat[ing] the town hall meeting by bringing in gaming [and] social networking.”

Still, the creation of a city-wide 3D model like Berlin’s is resource-intensive, and models must be continually managed and updated by many different partners. The evolution of a model over time does offer potential to preserve historical versions of a virtual city for exploration. An example exists in Twinty, an online “mirror world” game where users’ avatars interact with 3D models of real world cities. Building on Virtual Berlin data, Twinty constructed a virtual Berlin Wall circa 1989.

Municipalities are increasingly partnering with academic institutions and private companies to develop their own 3D models. Parts of Vancouver, Glasgow, New York, Adelaide, and Singapore have already been modeled. However, expanding these models to cover entire cities, as in the 890 km² Virtual Berlin, remains beyond the reach of most municipal budgets. What do you think – is a comprehensive 3D model something that all major cities should devote resources to developing and managing?

Urban Planning as Computer Game in Boston’s Chinatown

Posted: **May 7th, 2010** | <http://goodspeedupdate.com/2010/2964>

(Excerpt :) Computer games like Sim City and Grand Theft Auto feature expansive, photorealistic urban environments and compelling storylines that engross players for hours. In contrast, public meetings about planning issues feature dry, technical information presented through static presentations and reports. It’s little wonder these meetings generally attract the “usual suspects,” with the skills and patience to digest complex data and follow the arcane legalizations of local planning.

A new interactive game about Boston’s Chinatown neighborhood seeks to merge the interactivity of games with the real problems of planning. Why shouldn’t games reflect realistic challenges, such as finding housing, jobs, and places to hang out in the city? Can a game both solicit community input and provoke inter-generational dialog? The game, called Participatory Chinatown, is an exciting example of how new technology can do just this. Participatory Chinatown has two iterations: an online single-player version, and a collaborative version that groups can play in real-time through networked computers. In each, the game’s 15 characters explore a 3D version of Chinatown, collecting information about opportunities and interacting with other players they find. At the end of the game, players must decide which choices best fill their quest for housing, jobs, or social spaces. Whether they succeed depends on how much information they are able to collect and how much competition exists. In a second phase, players can walk through one of three hypothetical redevelopment proposals for a part of the neighborhood, earning points for leaving comments about their opinions and concerns it provokes. Full article: <http://goodspeedupdate.com/2010/2964>

Scottsdale, AZ: The BIG Map

Public Technology Institute 2009-2010 Technology Solutions Award Winner

<http://www.scottsdaleaz.gov/>

Objective: Georeference City Documents and provide a search vehicle for them. The BIG Map integrates nine different systems that are all geographically based. These systems include the Community Development System (CDS), Building Inspection and Permitting system (BIPs), Land Information System, Scottsdale Business License System, Case History, Hummingbird Document Management, Development Agreements and Subdivisions.

CDS and BIPs contain information for zoning and development public hearing cases, plan review, construction permits and inspections since 1989. The BIG Map allows the user to search by an address or intersection. The result is a map that allows the user to select a single parcel or all the parcels displayed on the map. The results can include plans, permits, right-of-way permits, from 1989 to present, public hearing cases since the City of Scottsdale was established in 1951, business licenses and development agreements.

Interactive Technologies in Participatory Planning: A Guide for Somerville Community Corporation -Urban & Environmental Policy & Planning Department --Tufts University Spring 2010 http://ase.tufts.edu/uep/Degrees/field_project_reports/2010/Team_9_Final_Report.pdf

(Executive Summary)Advancements in technology are allowing for novel forms of citizen participation, and these are being explored by a wide range of organizations from community development corporations to government. These web-based forms of public participation create an avenue for engaging populations that have been traditionally excluded from the land-use planning process. These often include younger people and immigrant populations who may be uncomfortable attending or speaking at town hall meetings. However, the success of these newer forms of public participation is understudied and yet to be quantified.

The Team's client, Somerville Community Corporation, worked in conjunction with several parties to create an interactive website that aims to increase citizen awareness and participation in the planning process surrounding the extension of the Massachusetts Bay Transportation Authority's Green Line light rail system through Somerville, Massachusetts. As SCC prepares to launch an interactive website known as inTeractive Somerville, it has asked the Team to document the development process, provide recommendations to refine the site's design and implementation, and evaluate the site's effectiveness over time. Thus, this report offers recommendations for evaluating and refining the site as it moves from the pilot phase to launch. Additionally, it examines the value and place of interactive technologies in the process of soliciting public participation.

This report is also intended to serve as a best practices reference for other community and governmental organizations that may be considering the use of technology for increasing participation in planning and for academic institutions, specifically urban planning and community development programs, which teach students how to promote equity in planning. A literature review of participatory planning theory and methods is provided, which explains the context for how interactive technologies can support communicative planning. This contextual research is deepened through case study assessments of several projects that use interactive

technologies to foster participatory planning. Also provided is a suite of evaluation tools and a list of key considerations and recommendations that serve as best practices resources for SCC and other organizations seeking to develop and use interactive technologies for participatory planning. Full Report:

http://ase.tufts.edu/uep/Degrees/field_project_reports/2010/Team_9_Final_Report.pdf

Public Works, Solid Waste, Public Utilities- Best Practice Trends

San Diego, CA Enterprise Asset Management: 2009-2010 Technology Solutions Award Winner

The City of San Diego developed an enterprise asset management (EAM) system that has improved its ability to account for and maintain its infrastructure. As an example of how the system works, consider the notification of an inoperable streetlight. When the call is received, a call center employee asks for the address, then accesses a GIS map showing the streetlights at that location. Using this map, the exact streetlight is identified and its location verified prior to dispatching a technician. While the GIS provides visual information for the streetlight, the ERP provides reporting functionality and documentation capability to the system. After selecting the streetlight in GIS, the ERP provides detailed data including component schematics, work history, and other calls received. After getting all necessary information, the call center employee issues a work order and assigns a technician. Job status and completion information is tracked in ERP.

Several years after implementation, Project SYNERGY's first major enhancement was online customer service for citizens. This advanced system gives citizens another means (other than telephone) to submit repair requests. Project SYNERGY was further enhanced with addition of GPS devices to street sweepers. This effort has allowed sweeper operations to be managed by Project SYNERGY. Today, with implementation of field computers, mobile infrastructure module and GIS mobile software, the City is able to complete management activities from the field.

Boston: Citizens Connect iPhone Application

Last October, the City of Boston expanded the Citizens Connect suite of online services to include an iPhone application as part of its strategy to promote Citizen-to-City transactions. The Citizens Connect iPhone application enables residents and visitors to gather information about the physical state of the city and send that information directly to the appropriate city operation department.

Constituents can report issues or concerns, such as accumulated trash or snow, by uploading salient information directly into Boston's Citizens Connect CRM (Constituent Relationship Management) system where it can be addressed efficiently and effectively by workers. Key features include the ability to attach a photo, capture system-generated Geographic Information System coordinates, edit Geographic Information System coordinates to improve accuracy and follow the service request with end-to-end tracking, because the system is fully integrated with the back-end work order management system.

City Manager & City Council Offices-Best Practice Trends

Johnson County, KS recognized by NACo for innovative county government efforts

Salt Lake City, Utah – July 6th, 2010: Johnson County was recently recognized by the National Association of Counties (NACo) for implementing innovative county government programs to better serve area residents.

Among other programs, Johnson County is recognized for implementing a modern Legislative Information Management System (LIMS) that greatly improves citizen access to information, fosters government transparency, and streamlines manual processes. The County's LIMS uses SIRE's electronic document management systems to file, research, retrieve, and maintain a variety of records, as well as SIRE's Agenda Plus program to support all meeting management activities including agenda creation, streaming video, Minutes taking, and web publishing.

"SIRE, the county's Legislative Information Management System (LIMS) network, serves an ever-increasing demand for open access to public records," said Bernice Duletski, Deputy County Manager. "It helps Johnson County Government keep the general public, local media, and other government entities informed, and makes local government more open and transparent. LIMS provides a better opportunity for Johnson County citizens to be better informed about their local government and to voice their concerns, if needed. It's a wonderful tool."

Citizens are provided immediate access to actions of the Board through the online webcasting, cable television broadcasts, and the LIMS website. This access has resulted in a large reduction in the number of phone calls from constituents asking for archived records, many of which are now located on the LIMS website.

"SIRE allows us to be more transparent to the citizens of Johnson County and provides greater access to minutes and documents of the daily activities of Johnson County Government", said Hannes Zacharias, County Manager.

Convention Center, Public Affairs & Personnel-Best Practice Trends

Online Tickets Help Fresno, Calif., Get Concert Money Quickly (November 5, 2010)

The phrase "time is money" is a worn lyric, but in Fresno, Calif., that cliché rang true for city workers who were in charge of collecting fees from promoters who used city-owned venues for their concerts and sporting events.

Sometimes it took longer than it should have to collect that money — no small matter for a local government that like most across the country is starved for revenue. So in August city officials began requiring that the events begin using a Web-based ticket purchasing solution that automatically sends Fresno's cut of the money into city coffers.

The hosted solution is called ShoWare, made by VisionOne. Patrons interested in attending an event can go to that event's venue website or physical box office to purchase a ticket. A ShoWare application is installed either online or at the box office so revenue from ticket sales can be sent directly to a municipality's account, according to Joe Wettstead, vice president of sales and marketing for the product. According to the vendor, municipalities that contract through ShoWare have lower ticket convenience fees than some of the big ticket-purchasing websites, such as Ticketmaster. This savings can make tickets cheaper for the public.

William Broomfield, Fresno's events manager, said the city sponsors three venues in Fresno. In Fresno's arrangement, promoters for the venues decide the ticket prices while the city receives revenue from event ticket convenience fees. Wettstead said the Web-based application provides everything municipalities would get from Web portal ticketing, but at lower cost. Typically portal ticketing vendors charge anywhere from \$10 to \$15 per ticket as a convenience fee, but with ShoWare, convenience fees are much lower — ranging from \$1 to \$2 per ticket.

ShoWare gives venues, municipalities or event promoters the power to set ticket prices, track tickets, do accounting, create packages and do access control for an event. Recording event information and making any changes to that information can be done in real time by logging into the software, Wettstead said. Some of the big vendors that sell tickets through popular websites hold a municipality's ticket revenue for 90 days before that event occurs, Wettstead said. After the event, the vendor will often hold the revenue for an additional 30 days. Instead of a municipality waiting 120 days to receive their ticket revenue, ShoWare can create a constant stream of revenue that goes to the municipality's account.

"A lot of times, hundreds of thousands of dollars are sitting [with the portal vendor], so not only is this traditional portal vendor making an exorbitant fee, they're also reaping interest on that money during that time period," Wettstead said. "We just think it's a little backward."

New Video Technologies Enhance Government Efficiency, Transparency And Accountability

YouTube-type technology has forever changed the concept of transparent government, as the last election cycle demonstrated. The impact of this watershed capability cannot be overstated! Citizens can now find speeches, comments and interviews from virtually any elected official, captured and uploaded by thousands of normal citizens. This technology allows virtually everyone access to important information critical to our society and the democratic process!

The next generation of this technology is 'viewer-defined indexing'. Viewer-defined indexing allows any viewer to 1) watch a video, 2) specify the precise segment or 'video byte' they desire and 3) create a short Internet link that can be emailed or embedded into a website. By utilizing viewer-defined indexing, anyone that has the capability to viewing an online government proceeding can easily create and email (or post on a website or blog) a link to a precise segment of that program. This process allows all interested citizens and stakeholders to evaluate and showcase their elected officials work. Government employees are routinely required to create DVD/videotape copies of proceedings in response to requests from citizens via the Freedom Of Information Act (FOIA). By allowing citizens to create their own links to

specific portions of a video, FOIA requests can be almost totally eliminated, literally saving hundreds of hours of labor and thousands of dollars each year.

Online video and enhanced indexing offer efficient tools to compliment the current local and national trends toward increased governmental transparency and accountability. As these trends evolve, new video technologies will continue to lead us toward better government.

Online Application Process Supports City's Environmental Initiatives

The City of Charlotte, has streamlined the hiring process by providing a convenient and easy way to view and apply for city job openings online. The online process also helps the city reduce its paper usage, reinforcing its commitment to environmental initiatives.

With Candidate Gateway, the city can make job information and easy-to-use application tools available to potential employees around the clock via its external Web site, as well as the intranet for internal applicants. On the first day of deployment, the city received more than 400 applications with minimal questions about how to use the system. By the end of the first week, the city had received more than 1,860 applications with no increase in questions via phone or e-mail. This surpassed the average number of paper resumes or applications the city previously received in one week.

To further simplify processes for the city's more than 340 hiring managers, the city created a custom page that managers can visit to view all applicants, application information and hiring status, as well as to easily print or e-mail a copy of each application. This unified page simplified the training process significantly.

Government Trends

Each year NASCIO conducts a survey of the state CIOs to identify and prioritize the top policy and technology issues facing state government. The top ten priorities are identified and used as input to NASCIO's programs, planning for conference sessions, and publications.

Gartner has also identified the top 10 technologies and trends that will be strategic for most organizations in 2011. "Gartner defines a strategic technology as one with the potential for significant impact on the enterprise in the next three years. Factors that denote significant impact include a high potential for disruption to IT or the business, the need for a major dollar investment, or the risk of being late to adopt."

NASCIO 2010 State CIO Survey Results for Top Ten Technology Priorities for 2011

1. Virtualization (servers, storage, computing, data center)
2. Cloud computing (software as a service, infrastructure, applications, storage)
3. Networking (voice and data communications, unified communications)
4. Legacy application modernization / renovation
5. Identity and access management

6. Document/Content/Records/E-mail management (active, repository, archiving, digital preservation)
7. Security enhancement tools
8. Business Intelligence (BI) and analytics applications
9. Enterprise Resource Planning (ERP)
10. Social media and networking (Web 2.0 services, wikis, blogs, collaboration technologies, and social networking)

Gartner's 2011 List of Top 10 Technologies and Trends:

1: Cloud Computing

Cloud computing services exist along a spectrum from open public to closed private. The next three years will see the delivery of a range of cloud service approaches that fall between these two extremes. Vendors will offer packaged private cloud implementations that deliver the vendor's public cloud service technologies (software and/or hardware) and methodologies (i.e., best practices to build and run the service) in a form that can be implemented inside the consumer's enterprise. Many will also offer management services to remotely manage the cloud service implementation. Gartner expects large enterprises to have a dynamic sourcing team in place by 2012 that is responsible for ongoing cloudsourcing decisions and management. A survey released April 20, 2010, conducted by the nonprofit Public Technology Institute (PTI), aggregated the opinions of 93 local governments IT executives found 45 percent of local governments are using some form of cloud computing for applications or services. Additionally, the findings revealed that an additional 19 percent of local governments plan to implement some form of cloud computing within the next 12 months, while 35 percent don't intend to do so at all.

2: Mobile Applications and Media Tablets

Gartner estimates that by the end of 2010, 1.2 billion people will carry handsets capable of rich, mobile commerce providing an ideal environment for the convergence of mobility and the Web. Mobile devices are becoming computers in their own right, with an astounding amount of processing ability and bandwidth.

3: Social Communications and Collaboration

Social media can be divided into: (1) Social networking —social profile management products, such as MySpace, Facebook, LinkedIn and Friendster as well as social networking analysis (SNA) technologies that employ algorithms to understand and utilize human relationships for the discovery of people and expertise. (2) Social collaboration —technologies, such as wikis, blogs, instant messaging, collaborative office, and crowdsourcing. (3) Social publishing —technologies that assist communities in pooling individual content into a usable and community accessible content repository such as YouTube and flickr. (4) Social feedback - gaining feedback and opinion from the community on specific items as witnessed on YouTube, flickr, Digg, Del.icio.us, and Amazon. Gartner predicts that by 2016, social technologies will be integrated with most business applications. Companies should bring together their social CRM, internal communications and collaboration, and public social site initiatives into a coordinated strategy.

4: Video

Video is not a new media form, but its use as a standard media type used in non-media companies is expanding rapidly. Technology trends in digital photography, consumer electronics, the web, social software, unified communications, digital and Internet-based television and mobile computing are all reaching critical tipping points that bring video into the mainstream. Over the next three years Gartner believes that video will become a commonplace content type and interaction model for most users, and by 2013, more than 25 percent of the content that workers see in a day will be dominated by pictures, video or audio.

5. Next Generation Analytics

Increasing compute capabilities of computers including mobile devices along with improving connectivity are enabling a shift in how businesses support operational decisions. It is becoming possible to run simulations or models to predict the future outcome, rather than to simply provide backward looking data about past interactions, and to do these predictions in real-time to support each individual business action. While this may require significant changes to existing operational and business intelligence infrastructure, the potential exists to unlock significant improvements in business results and other success rates.

6. Social Analytics

Social analytics describes the process of measuring, analyzing and interpreting the results of interactions and associations among people, topics and ideas. These interactions may occur on social software applications used in the workplace, in internally or externally facing communities or on the social web. Social analytics is an umbrella term that includes a number of specialized analysis techniques such as social filtering, social-network analysis, sentiment analysis and social-media analytics. Social network analysis tools are useful for examining social structure and interdependencies as well as the work patterns of individuals, groups or organizations. Social network analysis involves collecting data from multiple sources, identifying relationships, and evaluating the impact, quality or effectiveness of a relationship.

7. Context-Aware Computing

Context-aware computing centers on the concept of using information about an end user or object's environment, activities connections and preferences to improve the quality of interaction with that end user. The end user may be a customer, business partner or employee. A contextually aware system anticipates the user's needs and proactively serves up the most appropriate and customized content, product or service. Gartner predicts that by 2013, more than half of Fortune 500 companies will have context-aware computing initiatives and by 2016, one-third of worldwide mobile consumer marketing will be context-awareness-based.

8. Storage Class Memory

Gartner sees huge use of flash memory in consumer devices, entertainment equipment and other embedded IT systems. It also offers a new layer of the storage hierarchy in servers and client computers that has key advantages — space, heat, performance and ruggedness among them. Unlike RAM, the main memory in servers and PCs, flash memory is persistent even when power is removed. In that way, it looks more like disk drives where information is placed and must survive power-downs and reboots. Given the cost premium, simply building solid state disk drives from flash will tie up that valuable space on all the data in a file or entire volume, while a new explicitly addressed layer, not part of the file system, permits targeted placement of only

the high-leverage items of information that need to experience the mix of performance and persistence available with flash memory.

9. Ubiquitous Computing

The work of Mark Weiser and other researchers at Xerox's PARC paints a picture of the coming third wave of computing where computers are invisibly embedded into the world. As computers proliferate and as everyday objects are given the ability to communicate with RFID tags and their successors, networks will approach and surpass the scale that can be managed in traditional centralized ways. This leads to the important trend of imbuing computing systems into operational technology, whether done as calming technology or explicitly managed and integrated with IT. In addition, it gives us important guidance on what to expect with proliferating personal devices, the effect of consumerization on IT decisions, and the necessary capabilities that will be driven by the pressure of rapid inflation in the number of computers for each person.

10. Fabric-Based Infrastructure and Computers

A fabric-based computer is a modular form of computing where a system can be aggregated from separate building-block modules connected over a fabric or switched backplane. In its basic form, a fabric-based computer comprises a separate processor, memory, I/O, and offload modules (GPU, NPU, etc.) that are connected to a switched interconnect and, importantly, the software required to configure and manage the resulting system(s). The fabric-based infrastructure (FBI) model abstracts physical resources — processor cores, network bandwidth and links and storage — into pools of resources that are managed by the Fabric Resource Pool Manager (FRPM), software functionality. The FRPM in turn is driven by the Real Time Infrastructure (RTI) Service Governor software component. An FBI can be supplied by a single vendor or by a group of vendors working closely together, or by an integrator — internal or external.

