2013 Information Technology Strategic Update

City of Raleigh, North Carolina

Table of Contents

Message from the CIO and Community Relations Officer

I am pleased to present the City of Raleigh Information Technology (IT) Department strategic update. It is forward-looking and informed by priorities identified by City departments during the 2010-11 strategic planning sessions. These initiatives chart a course to help position Raleigh as a city where technology enables efficiency, service delivery, collaboration, and civic innovation.

The IT Department focuses on delivering technology innovation that provides business value to the City organization and the Raleigh community. The IT Department is committed to listening and leading in the delivery of technology services and information systems. As the demand for technology infrastructure continues to increase, the IT Department must provide the consultative services to align technology investment to the overall goals of the City. Civic engagement, information transparency, and promoting constituent facing programs that support a highly technological region extends the role of the IT Department beyond the traditional operational model.

The information technology strategy aligns with the business departments' goals and the City mission. This strategy maintains continuity with the 2011 plan and further specifies a technology foundation, services and business processes to support a viable 21st century city.

The plan, originally adopted in August 2011, outlines a strategic vision and direction for the IT Department. It provides strategic objectives and defines the guiding principles that serve as guideposts for the IT Department in supporting City programs and business operations to better serve Raleigh's citizens.

The City of Raleigh continues to receive national recognition as one of the best places in the country to live, work and play. Technology plays an ever-increasing role in helping the City of Raleigh deliver services. It enables increased productivity, access to information, and civic innovation. Raleigh's technology can be a powerful economic development tool for the community. An innovative, progressive city gains a reputation as a good place to live. Raleigh's reputation and technological amenities are important to businesses and individuals. People want to conduct business and interface efficiently with their local government. It is important to provide access to geographical information system maps, statistical data, and land development information.

We are committed to implementing the initiatives identified in this update, developing partnerships, and delivering innovation that enables the City of Raleigh to succeed in the delivery of superior citizen service.

How Information Technology Aligns

Information Technology Department Mission and Vision

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 IT Department promotes technology to improve economic development, social growth and efficiencies in the delivery of services as a basic citizen expectation. In short, the needs of the citizens and business departments drive the IT Department agenda. To become more proactive and agile in providing technology services to business partners, IT has adopted an organizational model focused on service delivery and civic engagement.

Information Technology Guiding Principles

Standardization	Standardize information technology solutions whenever possible to reduce costs and optimize information sharing
Business Process Performance	Implement information technology systems to increase business process performance through requirements, modeling and cross-functional business involvement
Infrastructure	Build a technology infrastructure that is measured by its scalability, reliability, and security
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
Open Government	Establish information technology systems that ensure public trust, transparency, public participation, and collaboration
Strategic Partnerships	Develop public-private partnerships with like-minded organizations to promote solutions for the good of the community

How We Work

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—vendor management, talent management, business enablement, infrastructure delivery and management, application delivery and management, IT performance and value demonstration, security and business continuity planning, and IT governance—is the key to ensuring that IT's strategic goals and daily operations align with the City of Raleigh mission.

Technology Staff and Environment

There is an ever-increasing demand from City departments and citizens for greater access to information through mobile applications and new products. The challenge remains in keeping up with strategic technology advancements while the IT Department budget and staffing has remained unchanged for four years.

The City of Raleigh continues to face a shortfall in technology skills and an emerging crisis in its ability to attract and retain competent and experienced technical staff due to increased local competition and lack of competitive compensation. Competition in hiring and retaining highly skilled staff will continue to increase as the growth of computer technology occupations outpaces other occupations. The IT Department currently has several key positions that remain unfilled. An IT salary study is currently being pursued in conjunction with strategies to develop a fellowship program.

Enterprise Project Management Office

The Enterprise Project Management Office supports the Chief Information Officer and the Information Resource Management Committee in overseeing the City's portfolio of technology projects and managing the City's technology investment process. The Enterprise Project Management Office uses a tiered governance structure and relies on a stage gate methodology to ensure success across the entire technology project portfolio. The governance structure includes steering committees with varying levels of executive involvement throughout the portfolio life cycle. This governance model aids in strategic planning, budget prioritization, decision-making, project visibility, and performance measurement.

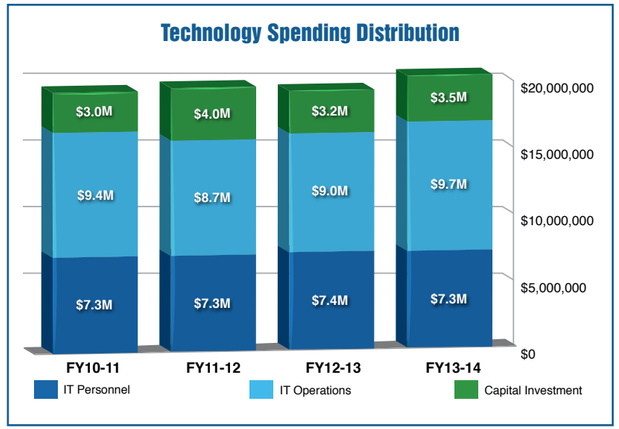
The Enterprise Project Management Office has scaled the same methodology used for strategic enterprise technology projects to enable predictable, agile deployment for all technology projects. The methodology, customized for project complexity, helps the City realize technology benefits sooner while reducing project risks.

The stage gate methodology reduces project risk and helps stakeholders manage the opportunity to deliver the maximum return on investment. Management decision gates divide project effort into distinct stages. Industry best practice shows that a disciplined approach to project, program, and portfolio management increases the benefits realized from the investment in information technology assets and resources. The stage gate methodology applies this disciplined process to project decision-making.

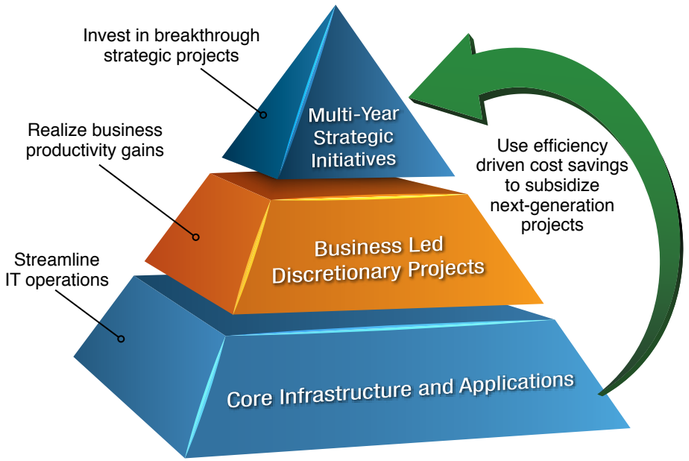
How We Manage Budget

The IT Department operational costs, capital investments, and staffing has remained relatively constant over the past four years.

In 2012, IT consolidated data centers and deployed a private cloud solution using server virtualization technology. This reduced the primary data center's footprint by 50% and successfully virtualized 92% of the City's servers, saving $350,000 in hardware costs. The virtualized infrastructure simplified administration, improved efficiency, and increased available capacity by 100%.



Technology Reinvestment



The IT Department is committed to cost reductions and efficiency gains through practices such as citywide consolidation of wireless vendors and data center virtualization. IT has consistently reduced and stabilized costs over the past few years. Creative solutions and process improvements are used to simplify the infrastructure, decrease the number of applications, and increase efficiencies. As cost avoidance and savings are realized, the savings are reinvested in technology improvements and innovative solutions.

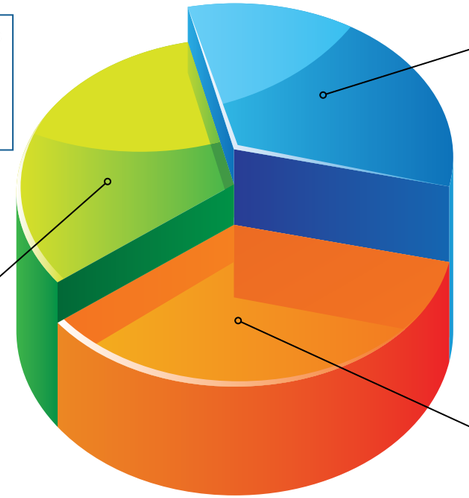
How We Measure Success

Value Delivery

Technology projects are implemented using a value delivery approach that focuses on delivering the expected and desired business benefits of the project.

Project Success Measures

These are the primary measures of success. Achievement of these three measures is critical to the value and business effectiveness of the project.



VALUE EFFECTIVENESS

Did it deliver the project outcomes, benefits, and value expected?

BUSINESS EFFECTIVENESS

Did it enable, support, and deliver the business outcomes, benefits, and value?

DELIVERY EFFECTIVENESS

Was it delivered on time, on budget, and to the required quality level?

Desired Business Outcomes and Benefits

In this approach, the steering committee must first determine the desired business outcomes and benefits for the project. Everything that happens on the project will be viewed and assessed in terms of its potential impact on delivering the desired business outcomes, benefits, and value.

What We Manage

Technology Initiatives

Raleigh Connected

The City's comprehensive technology initiative, Raleigh Connected, offers free outdoor Wi-Fi, creates a fiber network to serve government, and extends wireless access to families in underserved areas of Raleigh. The initiative is dedicated to the belief that we should enrich the community in which we live, work, and serve by developing community programs to promote digital inclusion.

We are committed to the idea that individuals should have access to technology to learn critical workforce skills and enhance their lives. The technology infrastructure of Raleigh Connected helps make city government more efficient, but our goal is much greater. We seek to promote economic growth across the city through workforce training and widespread Internet access. When we connect underserved communities with technology, we give residents the power to enter the economic mainstream.

Raleigh Connected is about so much more than hardware. Through access, education, awareness, and information, we are building a culture that values technology and embraces it to enhance lives. Raleigh is building a 21st century city using technology as a catalyst for sustainable economic development.

Digital Connectors

Raleigh's Digital Connectors program began through a Broadband Technology Opportunities Program (BTOP) grant in partnership with One Economy. Today, the program has 73 Digital Connectors alumni and the City of Raleigh sustains the program through strategic partnerships.

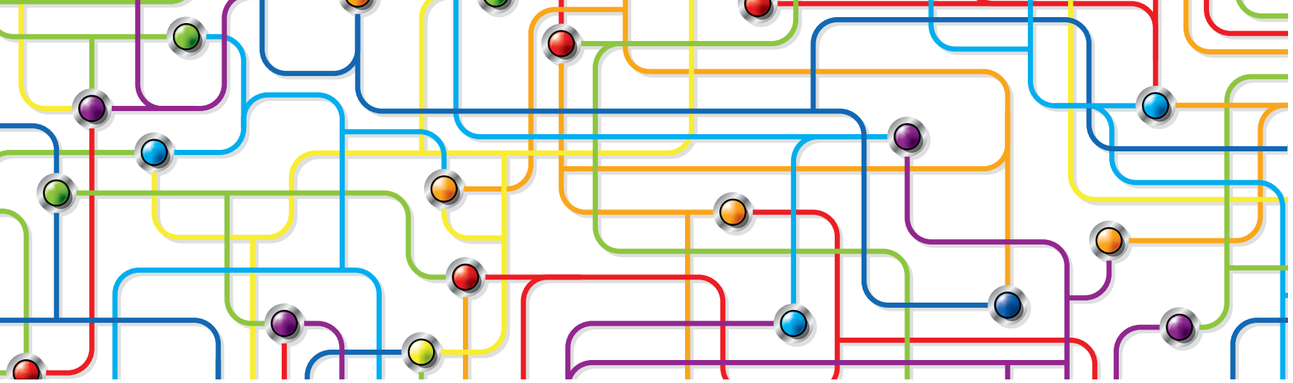
Raleigh's young people are key assets for the city to continue as a national leader in high-tech innovation. The Digital Connectors program offers youth a chance to expand 21st century technology skills, develop professional life skills, participate in open data projects, explore workplace pathways, and serve their communities. Each Digital Connector commits to 56 hours of community service to gain strategies for improving their communities and their life through technology and community service.

Digital Connectors serve their community by training community members on basic computer skills and the Internet, refurbishing computers for economically disadvantaged families, promoting digital literacy at community events with partner agencies, and performing humanitarian service projects.

During the academic school year, Digital Connectors attend classes two evenings a week for a total of five hours. They learn technical, leadership, social, and life skills through a combination of instructor-led training, team exercises, field trips, guest speakers, mentors, and community service. Graduates of the program receive $500, a laptop computer, and other incentives for their participation.

The IT Department, in collaboration with the Raleigh Parks, Recreation and Cultural Resources Department, provides an innovative learning lab in the Saint Monica Teen Center. The advanced learning lab is home to the Raleigh Digital Connectors program. Teens participate in virtual field trips and engage with mentors, instructors, and experts from around the world thanks to partnerships with AT&T, AT&T Pioneers, Cisco Systems, MCNC, Microsoft, IBM, Red Hat, Global Knowledge, Robert Half International, Local Government Federal Credit Union, and SAS Institute.

In addition to the Digital Connectors program, the City is developing an advanced entrepreneurship program. The program's overarching goal is to provide youth with the knowledge and skills to become business entrepreneurs. The program aims to advance innovation, community sustainability, and economic development. The curriculum will include lessons on creating a business plan, financial planning, business laws and regulations, marketing, and staffing. Individuals with an entrepreneurial spirit and basic digital literacy skills will be encouraged to apply to the program. In particular, youth who completed the Digital Connectors program and have a business idea they want to develop will be recruited. Local entrepreneurs will be sought to provide internships or shadowing opportunities for the students. The target date for starting this program is summer 2014.



Raleigh Connected Network

The City of Raleigh's network includes a downtown fiber ring that connects major City facilities. The IT Department collaborates with Raleigh's Convention Center to provide technology to support regional and national high-tech conferences.

The IT Department provides free outdoor Wi-Fi in the center city, Pullen Park, and Annie Louise Wilkerson Nature Preserve Park. Each month, the center city Wi-Fi serves thousands of downtown business professionals, visitors, and patrons. The City of Raleigh and the Downtown Raleigh Alliance collaborated to brand and market the service as You R Connected.

Raleigh provides broadband access to 1,482 homes in underserved areas throughout the City. Funding is provided through a Broadband Technologies Opportunity Partnership (BTOP) grant obtained in partnership with One Economy Corporation.

In 2011, Raleigh held a Broadband Stakeholder Symposium with individuals from like-minded organizations to begin discussions about building a broadband and technology ecosystem to support innovation and economic sustainability in all Raleigh communities.

In collaboration with a traffic signal upgrade project, 125 miles of additional fiber is being added throughout Raleigh's 142.8 square miles. This fiber backbone is expected to be complete in the third quarter of 2014. The fiber backbone will serve as the foundation for the City of Raleigh's municipal network. A separate construction project will be initiated to connect approximately 90 facilities. When complete, the 24-strand fiber network will reduce telecommunication costs by approximately $550,000 annually, and provide interconnections to partner organizations and non-profits.

North Carolina Next Generation Network

Bandwidth and high-speed access are the modern day technological equivalents of highways and electricity. Contemporary and innovative knowledge-based businesses and industries need bandwidth, fiber, an educated workforce, and a great place to live. Residents need universal access to broadband for communications, jobs, education, and entertainment. Current broadband speeds and pricing are insufficient to meet the growing demand of home businesses, telecommuters, healthcare, research, and other big data industries.

Under the banner of the national Gig U initiative, four local universities and their surrounding communities joined to initiate the development of open access, ultra high-speed bandwidth at low price points to stimulate innovation, economic development, and improved access and education. This regional partnership, called NC Next Generation Networks (NCNGN), is comprised of Cary, Chapel Hill, Carrboro, Durham, Raleigh, and Winston-Salem with the support of their Gig U partners of Duke University, NC State University, UNC Chapel Hill, and Wake Forest University/Wake Forest Baptist Medical Center along with their associated Chambers of Commerce.

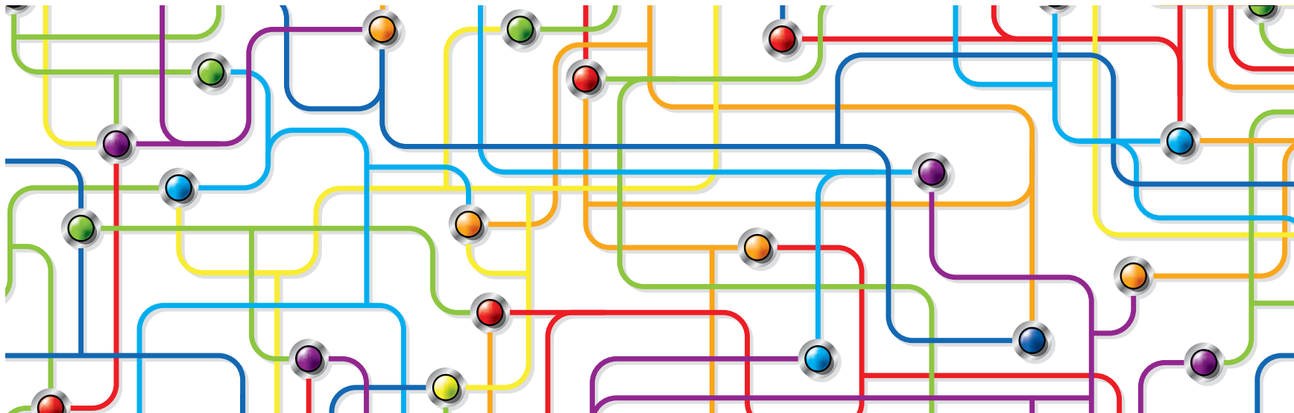
Since the summer of 2012, NCNGN has worked to develop a request for proposals to attract commercial carriers to design, build, and manage ultra-high speed networks in the region. This request for proposals was released on February 1, 2013. The Triangle area and Winston-Salem are looking to be among the first communities in the country to have reliable third-party service providers delivering ultra-fast bandwidth at highly affordable prices. Much like Kansas City, which has commitments for one gigabit of speed at $70 per month and 100 megabits of speed at $30 per month to residential users, NCNGN wants to bring similar benefits to the citizens, workers, and businesses of Cary, Carrboro, Chapel Hill, Durham, Raleigh, and Winston-Salem.

Community Benefits

Some of the participating communities will make existing technical assets, such as excess fiber, available at competitive prices to ensure this new network achieves the regional goals of reducing the digital divide, enhancing workforce knowledge and skills, promoting economic development, enhancing access for anchor institutions, and serving other targeted social purposes identified by the participating municipalities.

The City of Raleigh will offer fiber assets for lease to the North Carolina Next Generation Network initiative. The City's remaining fiber will be used to provide connectivity to City of Raleigh administrative, service, and recreation facilities.

In exchange for access to fiber assets, the City is requesting that vendors provide network maintenance and connectivity to underserved areas, public spaces, parks, and community centers. Selected vendors will provide high-speed Internet service over a wired or wireless network at a substantial discount from current market prices. The NCNGN request for proposal solicits a lease payment for 10 years for the municipal fiber and maintenance of Raleigh's entire 24-strand fiber network.



Raleigh Connected Partnerships

Developing strategic partnerships is a key guiding principle for the IT Department. The City of Raleigh can enhance its ability to provide innovative solutions for the community by collaborating with like-minded organizations.

Raleigh Connected Advisory Board

The Raleigh Connected advisory board helps shape local programs, identify focus areas and integrate relevant audiences in the Information Technology Department's community technology initiatives. The advisory board members serve a two-year appointment and collaborate to identify and promote areas of need related to comprehensive broadband adoption; provide educational and innovative support for internships, employment, and mentorship to the student participants; raise funds to sustain the Digital Connectors and future youth programs; and promote the value of digital literacy for workforce and economic development.

MCNC

The City partners with Microelectronics Center of North Carolina (MCNC) to access an in-state disaster recovery site. The MCNC network also provides connectivity and access to high capacity bandwidth for video conferencing at the innovative learning lab in the Saint Monica Teen Center.

900 South Wilmington Business Incubator

The City of Raleigh facility located at 900 South Wilmington Street opened in 2000 to serve as a business incubator to assist new and existing small businesses with management, marketing, and financial planning. The City has identified a diverse team of individuals to participate in visioning sessions to collaborate on defining the future direction for the facility. The visioning team includes community leaders, entrepreneurs, and representatives from businesses, non-profit organizations, universities, the City of Raleigh Economic Development office, and the City Manager's office.

The team will review a strategic planning document prepared through an IBM grant, evaluate national best practices for incubators, and determine whether an RFP is necessary to provide a fair and comprehensive approach for the facility. The team will conduct a site visit and review expansion plans for the facility to help develop recommendations for fully realizing the incubator's potential.

Civic Innovation

Open Raleigh

The City of Raleigh has a long history of open, collaborative government by engaging with citizens to provide high levels of customer service. In February 2012, the Raleigh City Council unanimously adopted an open source resolution. This was the first of many steps in a plan designed to make it easier to get information and interact with City government.

Raleigh is committed to an open source strategy that highlights transparency, collaboration, and improved access to local government information and data. The open source resolution paved the way for the Open Raleigh initiative. This initiative is a cross-departmental strategy focused on harnessing data to redesign and improve public service information, transparency, and transactions. City staff has engaged with citizen groups, youth development programs, entrepreneurs, and businesses to create an open data road map. The open data road map is a living document developed under the guiding principles of availability and access, reuse and redistribution, and universal participation. The road map moves the City forward in developing a set of open data policies.

On March 15, 2013, Raleigh published its open data catalog at Data.RaleighNC.gov. The open data catalog provides access to City data sets in open and standard ways for tech savvy and non-technical users. Citizen engagement grew exponentially during the first three months with visitors accessing 124,000 page views and more than 1.7 million records.

The City of Raleigh is a partner in the open government community and strives to become a worldwide model for an open source city. Raleigh embodies a collaborative regional approach to open data initiatives. Data interoperability is vital for the area municipalities that share an economy and innovative resources from Research Triangle Park and three research universities. Open data can create direct and measurable impacts on public sector agencies. The benefit of creating a "data infrastructure" as a public asset is enhanced through civic engagement and a well-planned data strategy. The City strives to develop opportunities for economic development, commerce, increased investment, and civic innovation through the Open Raleigh initiative.

Strategic Enterprise Initiatives

During the 2010-11 strategic planning process, departmental business needs were clearly defined, documented, and prioritized. The Information Resource Management Committee (IRMC) approved four multi-year strategic initiatives that align with City departments' needs and enhance their service delivery capability.

The strategic projects follow a standard project management methodology using stage gate processes. The first stage gate is the assessment and planning stage. At this stage, a pre-project team is established to define requirements, identify resources, determine business outcomes, estimate budgets, and identify possible solutions. The assessment and planning stage allows the City to use definitive requirements, proposed budgets, and schedules to negotiate payment schedules with vendors based on completed deliverables. After assessment and planning the IRMC determines whether the project should continue to implementation. If the project is approved to move forward, project funding is requested for the duration of the implementation. Project funding may span more than one budget year.

Enterprise Land Management

The land management project will provide an enterprise-wide system for managing the land development process through its entire life cycle. It will be used by all agencies and divisions involved in land development planning, building code regulation and enforcement, business licensing, municipal code compliance, and regulatory functions. The implementation of the system provides an opportunity to re-evaluate current business processes built around older technologies and organizational structures. The system will improve the ability to manage the city's growth by replacing antiquated stand-alone systems used for processes such as:

- Plan review and inspections for development plans, building permits, infrastructure, and map recordation
- Case management for code enforcement violations such as minimum housing, zoning, environmental and stormwater, tree conservation, and landscape
- Real estate case management for property acquisitions and inventory
- Assessments, business licensing, rental licensing, and periodic inspections

"This could be the most important implementation ever at the City of Raleigh. The increased efficiency and predictability would be very welcome by employees, citizens, and the design community."

- Inspections Department Employee

Enterprise Resource Planning—Talent Management

Today, the City's Human Resources Department manually performs staffing processes, including acquisition and onboarding of applicants. An automated candidate recruitment process is being implemented using Neogov Insight. Neogov Insight will allow candidates to create a profile, review available positions, and apply electronically for positions. Human Resources staff and hiring managers will be able to process applicants more efficiently. This will facilitate quicker hiring decisions and reduce the time from requisition to hire. Neogov Insight will be integrated with the City's PeopleSoft human capital management module to allow information captured during recruitment to be automatically imported into PeopleSoft, resulting in efficiency and cost savings. Once information is imported into PeopleSoft, new hires can complete all onboarding requirements electronically using PeopleSoft self-service.

Enterprise Content Management

The City wishes to develop a digital enterprise content and records management strategy that enables employees to fulfill information requests, improve business processes, raise service levels, and increase compliance by using digital capture, storage, retention, retrieval and workflows.

In 2012, a high-level enterprise content management assessment was conducted to review current and future electronic document and records management needs. Interviews with City staff and a study of current systems and projected growth provided background information necessary to develop an enterprise content and records management strategy and road map.

The enterprise content management executive oversight committee is currently determining next steps, including the creation of an enterprise records manager to guide the program and establish records retention policies for each department before a solution is implemented.

Enterprise Work Management

Cityworks, a GIS-centric work order management system, is being implemented to automate and streamline maintenance operations and expand asset management capabilities for the Public Utilities, Public Works, Solid Waste, and Parks, Recreation and Cultural Resources Departments. Cityworks will integrate with core business processes and applications, including payroll, human resources, finance, customer care and billing, the new master address database, and SeeClickFix. This will provide insight into business processes across multiple departments, providing a single point of information for analysis, collaboration, and opportunities for efficiencies and cost savings.

What's Next

Cloud Strategy

Costly data center infrastructure and complicated application management, including upgrades, are forcing organizations to consider cloud strategies and software-as-a-service solutions. The IT Department is researching options to move existing applications, including enterprise finance and payroll and email, to the cloud before the next scheduled hardware upgrade.

When it is fiscally beneficial, new systems and solutions will be cloud-based or easily migrated to the cloud in the future. This includes such systems as the project management system and the new enterprise land management solution. The decision is based on staff availability, technical proficiency, potential cost avoidance, and the opportunity to transfer complex maintenance tasks. The IT Department looks to outsource management of enterprise application infrastructure and focus on improving service levels and driving business initiatives. This allows IT staff to be strategic enablers for the business rather than overburdened by operational tasks.

Connected Workforce

A connected workforce eliminates the constraints of geographical location and increases productivity, while reducing operational costs. The IT Department continues deploying solutions to support the anytime, anywhere employee. More than 2,100 employees access their City email from their smartphone every day. Real-time access to information allows City staff to provide faster response times and increased levels of service.

The implementation of work order management and tablets provides field workers with a virtual office where they complete work assignments without returning to brick-and-mortar offices. Employees have the tools they need to take action in the field.

Communication tools that provide instant messaging, document sharing, and video conferencing increases productivity and reduces costs by allowing staff to collaborate without traveling between locations.

Lean Six Sigma

The IT Department will begin applying Lean Six Sigma practices to its solution architecture beginning January 2014. IT commits to providing Lean Six Sigma training for its management team and service delivery teams. Using the methodology will help improve responsiveness to technical challenges, opportunities and changes in business requirements.

Lean Six Sigma, a combination of Lean and Six Sigma methodologies, is used to develop and implement technology solutions with real results. The methodology helps staff identify process waste and reduce activities that do not add value to technology services. Primary emphasis is placed on learning to identify and then eliminate redundant effort from business and technical processes using iterative, agile development cycles that deliver real value to customers as quickly as possible. By focusing on business processes and process metrics, IT can increase customer satisfaction and provide quality driven products and services. This methodology will improve the IT Department's ability to innovate and achieve strategic success by driving change into the organization and optimizing processes to meet business and citizen's needs.

Service-Oriented Architecture

The IT Department adopted service-oriented architecture (SOA) to better align its services across business processes and their supporting systems. SOA is an architectural style that allows the creation of reusable code, known as a service. This service allows data from one system to be accessed and used by other systems. A common analogy for a service is building blocks that snap together. Rather than coding functions into a large custom application as done in the past, with SOA, the business process is made up of smaller, reusable building blocks that can be assembled as needed.

The benefits of SOA include faster development and deployment cycles that enable customers to realize business outcomes quicker than traditional development. SOA also reduces maintenance costs by discontinuing complex applications and their interdependencies and lowering system upgrade costs by reducing single-use interfaces.

What Others Are Saying

- 10th in the Center for Digital Government 2013 Digital Cities awards
- 3rd in the Center for Digital Government's 2013 Best of the Web awards
- Public Technology Institute 2013 Web 2.0 award for Open Data Portal
- Raleigh selected to participate in the North Carolina Next Generation Network initiative focused on stimulating the deployment of next generation broadband networks in North Carolina.
- North Carolina Next Generation Network named Community Broadband Project of the Year by the National Association of Telecommunications Officers and Advisors
- NCTA21 Awards nomination for best internal implementation for Open Data Portal
- Public Technology Institute 2012-13 Technology Solutions Significant Achievement award for Raleigh Connected Community Broadband
- Public Technology Institute 2012-13 Technology Solutions Significant Achievement award for the Open Raleigh Open Data program
- Open Data Institute awarded Pilot Open Data Certificate to Raleigh's Open Data Portal

City of Raleigh, Information Technology Department
January 2014