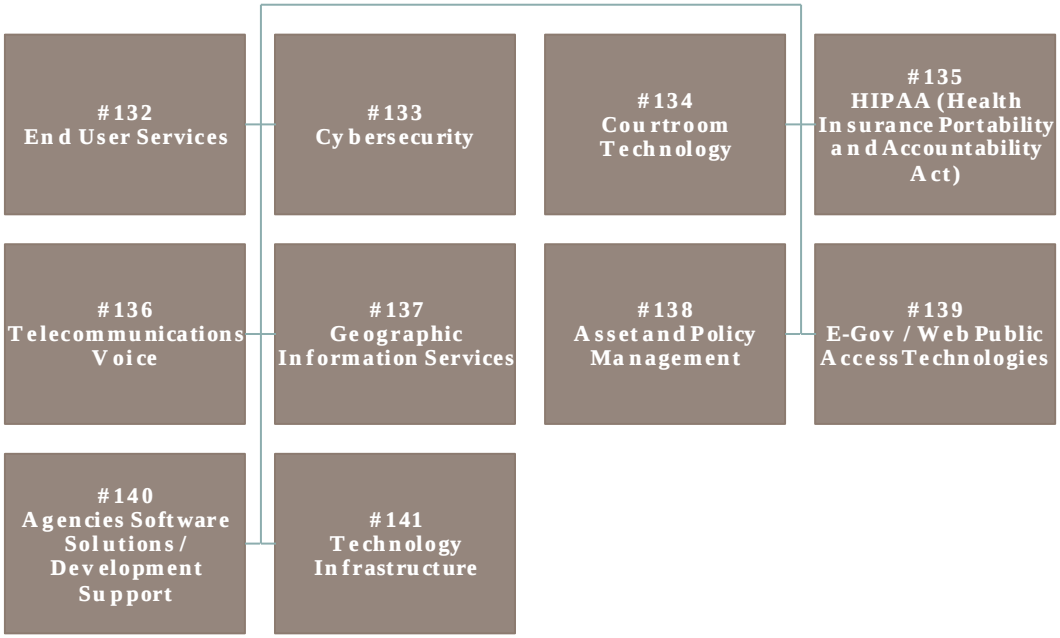


Department Overview

The Department of Information Technology (DIT) is a central technology provisioning agency that designs, manages, and implements all aspects of information technology solutions and supporting infrastructure that enable County agencies to deliver information and services. In that role, DIT is responsible for overall IT policy, governance, and enforcement for the deployment and use of Countywide IT assets and resources. DIT also performs application development and integration and provides IT project management oversight for technical execution of agencies' major/core business applications. Goals for County technology include identifying and implementing solutions that leverage IT investments across the enterprise, ensure the integrity of the County's information systems and data, and enable secure access to County information and services. The DIT General Fund budget provides for staff and service resources based on technology specialty subject matter expertise, including systems analysts and software developers that support revenue systems (tax); corporate systems; human services agencies; land development, public works and zoning; public safety/judicial administration; Library; Park Authority; Facilities Management, and others. DIT is also responsible for the multi-channel e-Government program, a specialized courtroom technology group, countywide telecommunications, data networks and radio systems, and the countywide information security program. DIT fosters an environment that harnesses new information, communication and social technologies in order to empower the public services of tomorrow.

Despite staff, service, and resource reductions over the last several years, DIT continues to manage growth in demand for County agencies' needs through prudent resource planning, use of selected sourcing opportunities and investment in IT support automation tools. DIT strives to accommodate agencies' needs as they implement their strategic plans, automate business processes and introduce new technology capabilities. In addition, DIT implemented enterprise-wide programs such as mobile device management, enhanced internet capabilities such as social/new media, enhanced wireless infrastructure, and Geographic Information Systems (GIS). DIT also supports major business transformation and cross agency initiatives such as the Tri-Court Courtroom Technology collaborative, land based system processes, inspections, code enforcement, FOCUS, and public safety interoperability.

Department Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
FUNDING			
Expenditures:			
Compensation	$21,097,606	$20,988,034	$23,000,325
Operating Expenses	15,887,701	18,339,233	15,080,210
Work Performed for Others	(6,275,190)	(6,128,530)	(6,791,873)
Total Expenditures	$30,710,117	$33,198,737	$31,288,662
General Fund Revenue	$34,148	$20,072	$23,088
Net Cost/(Savings) to General Fund	$30,675,969	$33,178,665	$31,265,574
POSITIONS			
Authorized Positions/Full-Time Equivalents (FTEs)			
Positions:			
Regular	252 / 252	252 / 252	250 / 250
Total Positions	252 / 252	252 / 252	250 / 250

Lines of Business Summary

		FY 2016 Adopted	
LOB #	LOB Title	Disbursements	Positions
132	End User Services	$3,620,251	30
133	Cybersecurity	1,166,078	10
134	Courtroom Technology	800,240	5
135	HIPAA (Health Insurance Portability and Accountability Act)	103,541	1
136	Telecommunications Voice	462,736	16
137	Geographic Information Services	2,028,872	20
138	Asset and Policy Management	5,841,884	31
139	E-Gov / Web Public Access Technologies	2,235,881	13
140	Agencies Software Solutions / Development Support	9,020,870	89
141	Technology Infrastructure	6,008,309	35
Total		$31,288,662	250

Lines of Business

LOB #132:

END USER SERVICES

Purpose

The End User Services LOB in the Department of Information Technology is responsible for providing direct technical support services for over 17,000 end-users, with first tier service to 22 agencies and partners with remaining County agencies for second tier technical support (those agencies have their own agency-based IT staff). The role of End User Services is comprehensive, providing a wide-range of technical services, including help desk support (IT Service Desk), dispatched technicians, desktop hardware and software administration and management, network user access and authentication. The activities in this LOB spans the spectrum from daily operational requirements for users, installation of software and hardware, and standards compliance to training for agency-based analysts and support in implementation of IT initiatives.

Description

The End User Services LOB is a county-wide single program in the Department of Information Technology (DIT) providing direct One Stop services for end-user installation, problem resolution and IT commodities administration. The basic services provided have been a part of DIT's core mission since its inception, but over the years have expanded dramatically in the scope of technology commodity types (desktops, laptops, tablets, smartphones, printers, etc.), software and security device configuration complexity, new County facilities, and expected hours of support since many agencies have services that now operate 24x7 and heavily rely on their IT equipment to function.

Over time, systems crash, hard drives fail, monitors malfunction, and keys stick. It is inevitable that clients will need assistance with one of their computing or mobile devices. Getting help is as easy as contacting the Service Desk, who will then contact the Desktop Support group. Desktop Support staff are trained and certified to perform repairs, and configure desktops and other devices. Desktop Support staff have the ability to remotely access a client's system to investigate and address software problems. If the problem cannot be addressed remotely, support staff are available to arrive on-site to resolve the issue. The organizational structure has evolved into an integrated business unit of several teams:

Desktop Support Services – technicians are organized in teams assigned to five core sites around the County so that travel time for responding to agencies is minimal. The teams respond to end-users for trouble shooting, repair and installs. The teams also assist agencies with desktop printers and scanners independently acquired by agencies (that are not part of the Multi-Functional Device program), and support installation of the devices in the PC Replacement Program.

The Desktop Support staff also conduct County agencies' workplace moves/rearrangements and changes; outfitting new buildings coming on-line; emergency operations activation (EOC) requirements such as setting-up temporary work sites; and elections. Most of this work is conducted on extended work hours, often times weekends and holidays. Also, in this program, staff are expected on duty irrespective of emergency event situations whereby the County is in either unscheduled leave status or closed. The scope of work also includes Public Access PCs in Libraries, Rec Centers and Senior Centers, special support for ad hoc events, such as: Celebrate Fairfax, Fall for Fairfax, job fairs, and special events in the Libraries.

In FY 2015 desktop staff closed 31,908 service tickets. The overall number of devices in the response portfolio is 23,000. Twelve positions are assigned to this group, for a support ratio of 1,917:1 for devices; 1,400:1 for users. Industry standard is 300:1 for PCs only.

The IT Service Desk (aka Help Desk) – IT Service Desk is a single point of contact One Stop to report a problem, request services, or ask a question. Its primary purpose is to respond directly to the individual users' technical needs via the phone or dispatch to first and second tier technical staff. IT Service Desk takes ownership of the problem or request and works to resolve it as quickly as possible. They can resolve a good percentage of the calls remotely, without having to dispatch a technician. This saves the County time and fuel costs, and minimizes loss of productivity due to equipment down time. All reported problems or service requests are logged as a ticket in the IT Service Desk's Incident Management System (IMS). Once logged, an e-mail confirming that a ticket has been generated and is being addressed is sent to the originator. Access to the IMS is offered through the Fairfax Portal so clients can view the status of their ticket or add notes. The IT Service Desk staff can perform all duties either at the normal work-site in the Government Center, or remotely from anywhere.

The IT Service Desk is responsible for the dissemination of problems to the appropriate and responsible division in DIT, whether internal response or through a third party vendor. Regardless of who can resolve the problem, the IT Service Desk always retains the oversight and responsibility for problem resolution and request fulfillment. DIT is accountable to its clients to ensure the problem or service request is handled quickly and effectively.

DIT IT Service Desk uses automation for efficiency and to support demand. These include self-service options. One example of how the automation of processes has resulted in significant annual cost avoidances is the process of automated password resets. Employees and staff are now able to access services from anywhere through the County portal thereby extending their office experience outside of their Fairfax County office. As a result of deploying self-service password management, a measurable per incident cost avoidance exists as a result of automating password resets. In FY 2013, 18,083 password management requests were resolved via self-service and there was a total cost avoidance of approximately $723,000 in support costs. For password management, the design and upgrade of the Password Help application provides County users with a self-service portal for password management. This initiative was extended county-wide and allows users to manage their own Windows and Mainframe passwords. Additionally, the team developed instructional videos to assist users in understanding how to use the self-service portal.

In addition to responding to problems and service requests, the IT Service Desk focuses on problem prevention. Reported problems are reviewed and correlated to identify trends and enlist engineering and technical support to prevent them. Addressing the root causes of problems is carried out to prevent future occurrences.

Fairfax County Government's IT Service Desk is operated from 7:00am to 7:00pm Monday through Friday, 10:00am-5:00pm Saturday, and 12:00pm-6:00pm Sunday (excluding holidays) with off-hour calls rolling to the Enterprise Technology Operations Center (ETOC) staffed with *"cross-trained"* personnel to insure clients receive the help they need when they need it.

The current organizational structure has resulted from streamlining efforts and enhancing DIT's capability to handle expansion in technology components without staff increases. This has enabled the organization to leverage staff and resources effectively and provide services in a rapidly changing technological environment, which has continued to experience phenomenal growth in both the expanded use of new technology and in the services provided to support it.

Benefits

The DIT End User Services LOB serves an extremely important county-wide service in keeping employees able to perform their jobs, so agencies can meet their operational and service missions, being responsive and enhancing productivity. Examples include conducting inspections, collecting revenues at counters, maintaining client records on demand, responding to public inquiries, etc.

This support model is recognized as being highly efficient which results in services being provided at the lowest cost point possible for an organization the size and complexity of Fairfax County. Goals and operational improvements have been and continue to be centered on the following strategies for an overall benefit in use of IT, increased effectiveness and efficiency in County business operations, increased user satisfaction, and a reduction in the overall cost of IT. These benefits are realized through:

- Automation of processes for increased productivity of County business operations
- Standardization of IT
- Consolidation and simplification of IT to increase efficiencies and reduce the total cost of IT
- Adopting Self-Service- resulting in increased business productivity and user satisfaction
- Keeping systems available, operational, and secure
- Trained staff

DIT is able to perform this function more efficiently and with greater effectiveness than would be the case if each agency had to deal with this process on its own. DIT also has the expertise and resources required to select properly managed infrastructure services, test technologies before deployment, and modify infrastructure services to ensure that they will operate properly and securely within the County's IT enterprise environment.

- The End-User Services LOB provides County users with a central point of contact for technical support with an efficient process;
- Desktop Support Services put the teams most directly involved with user support together for faster service delivery and reduced transportation time and costs;
- User outreach programs that include staff focused on direct interface for high level agency user needs and to provide an additional technical support liaison with DIT staff;
- Special support for ad hoc events, such as: Celebrate Fairfax, Fall for Fairfax, elections, job fairs, special events in the Libraries and Emergency Operations support.

Mandates

This Line of Business is not mandated, but it supports agencies that provide services which are mandated.

Trends and Challenges

Trends affecting the End User Services LOB include expansion of other technologies throughout agencies that include:

- Audio/Visual Teleconferencing rooms
- Automated Industrial systems
- Growth in the overflow of expert support for County agencies whose technology systems complexity has outpaced the ability of agency-based IT staff
- Expansion of the Digital workplace
- Integration of technology in the environment essential for end-users productivity
- Mobile printing (e.g. e-ticketing)
- Interfacing with 'clouds' in trouble-shooting reported problems
- Real-time, interactive support
- The 'Amazon' experience; i.e. the expectation of a quick, seamless experience

The major challenge has been accommodating support requirements in a timely manner with limited resources. DIT has done as much as possible to work within the limited resources, absorbing a wave of expansion in the scope of IT, and expectations to be available 24 x 7. Most of the staff have to work evenings, weekends and holidays to support moves, system upgrades, and new installs.

Recruiting and retaining qualified IT technicians in the highly competitive market is becoming more and more challenging. DIT has been fortunate so far by providing interesting work and on-the-job training, however, the salary scales need to be adjusted more in line with the market.

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #132: End User Services			
FUNDING			
Expenditures:			
Compensation	$2,474,596	$2,322,970	$2,803,474
Operating Expenses	468,676	307,018	816,777
Total Expenditures	$2,943,272	$2,629,988	$3,620,251
General Fund Revenue	$0	$0	$0
Net Cost/(Savings) to General Fund	$2,943,272	$2,629,988	$3,620,251
POSITIONS			
Authorized Positions/Full-Time Equivalents (FTEs)			
Positions:			
Regular	30 / 30	30 / 30	30 / 30
Total Positions	30 / 30	30 / 30	30 / 30

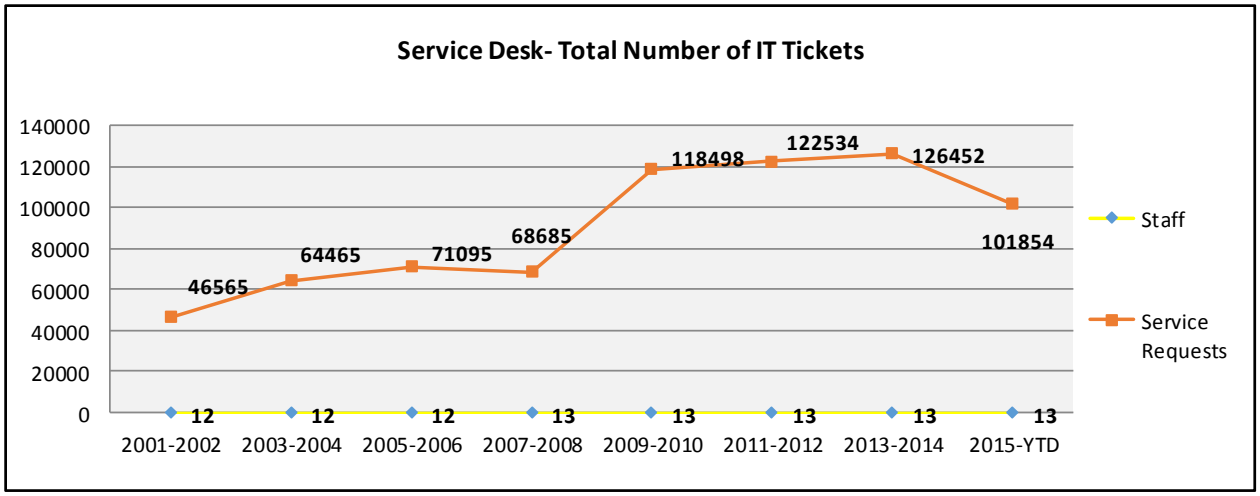
Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Percentage of Service Desk Requests Closed in 24 Hours	83%	85%	88%	88%	88%

The Fairfax County IT Service Desk is a single point of contact to report a problem, request services, or ask a question. The IT Service Desk takes ownership of the problem or request and works to resolve it as quickly as possible. All reported problems or service requests are logged as a ticket in the IT Service Desk's ticket system. The IT Service Desk is responsible for the dissemination of problems to the appropriate and responsible organization, whether internal or through a third party vendor. Regardless of who can resolve the problem, the IT Service Desk always retains the oversight and responsibility for problem resolution and request fulfillment. DIT is accountable to its end-users and agencies to ensure the problem or service request is handled quickly and effectively.

The method by which DIT measures the effectiveness of the IT Service Desk is the time it takes to close customer tickets. The IT Service Desk at Fairfax County is supporting a large user community with only a minimal number of staff. In order to ensure the same levels of customer satisfaction and turn-around time with tickets and requests, either an increased number of service desk personnel will be required, or an increased level of process automation and self-service requests will need to be developed where users can manage and fulfill their own requests through automated self-service provisioning.

Based on collected data over the past several years there has been an increase in the number of calls and tickets which is associated with implementation of new technologies in areas of government business and operations. This collected data shows an increased level of effectiveness in the maturity and service delivered by the County IT Service Desk.



LOB #133:

CYBER SECURITY

Purpose

The IT/Cyber Security Office (ISO) is responsible for developing and enforcing policy, and defining the security requirements for the protection and operability of the County's IT assets. ISO determines the managerial, administrative, operational, and technical protection requirements and controls and enterprise architecture for the County government to protect County services and the confidentiality of sensitive information as required by Federal and Commonwealth regulation and industry oversight and standards. ISO is a key resource for responding to cyber-events that affect County government functioning and data breaches, as well as conducting and/or assisting in investigations and analysis of unauthorized use issues and cyber-security events. ISO is also responsible for ensuring awareness and knowledge of appropriate use of County IT resources. ISO is the authority for all matters pertaining to IT and Cyber Security and is authorized by the County Executive in carrying out the duties of the Office. Reference CEX PM 70-05 – IT Security Policy.

Description

The Information Security Office (ISO) LOB is a single program with a County-wide mission, housed in the Department of Information Technology. It is administratively managed by the Chief Technology Officer, with authority for compliance and risk through the County Executive. To ensure best practices segregation of duties standard, ISO is organized in teams in specific areas:

- Policy, Governance and Awareness
- Monitoring, Investigations and Compliance
- Security Operations: Engineering and Administration, and Identity Access and Controls
- Security Architecture and Design

IT Security was established as an essential function in the Department of Information Technology at its inception in 1997, and evolved to the current ISO model over the years as the IT industry and security risks dynamically expanded and accelerated.

Ten staff members are assigned to the various areas of the mission. The work is augmented by expert consultants. The County's cyber security program helps ensure that the County's information technology resources secure the confidentiality, integrity, and availability of sensitive information in which the County has been entrusted: this may include, but is not limited to sensitive personally-identifiable information such as social security numbers, HIPAA, credit card data (PCI-DSS), law enforcement and court data. In order to carry out its mission, ISO has developed a policy and management framework for information security, authorized by the County Executive. ISO serves as a catalyst for ensuring that cyber security controls and practices are integrated into planned and ongoing County agencies and DIT operations. The managing position is the Chief Information Security Officer (CISO) who reports to the Chief Technology Officer, receiving authority for compliance activities from the County Executive and risk tolerance guidance from the Senior IT Steering Committee.

ISO works with other technology expert areas in DIT in carrying out its architecture and engineering work. The CISO is standing member of the DIT leadership team, and the position is in the DIT leadership line of succession.

Specific activities of the Information Security Office staff include:

- Exploring and assessing information security risks to business operations. Researching potential threats, vulnerabilities, and control techniques and communicating this information to agencies and senior leadership as necessary;
- Determining what policies, standards, and controls must be implemented to reduce these risks. Developing and adjusting countywide policies and procedures to ensure information systems confidentiality, integrity and availability, and to prevent and defend against unauthorized access to systems, networks and data;
- Participating as an active member in the DIT Architecture Review Board which reviews application and proposed network architecture implementations and changes and recommend enhancements to enhance security posture;
- Implementing and managing malicious code protection platforms. This strategy includes a defense-in-depth architecture with multiple layers of protection, detection, and prevention at the endpoint, network, and application layers (workstation, intrusion detection systems and next-gen firewalls, and email gateways);
- Providing incident response and forensic capabilities in the event of a data breach, exposure, or system/application compromise;
- Facilitating the gathering, analysis, and preservation of evidence used in the prosecution of computer crimes; assisting in the fulfillment of eDiscovery requests as the result of litigation, collecting and fulfilling electronic records requested through Virginia Freedom of Information Act, and providing information as required by agency personnel investigations or audit requests;
- Developing and implementing secure Identity Management Platforms for managing user access to enterprise network and applications as well as customer-facing portals that provide mission essential services;
- Participating in internal and external audits to assure compliance with regulatory requirements (Financial systems, HIPAA);
- Developing and implementing a robust cyber security awareness program to ensure that systems, network, and data users are aware of, understand, and adhere to systems security policies and procedures. Current activities include New Employee Orientation, an annual Cyber Security Awareness Day, and a phased deployment of online refresher training to all County agency personnel;
- Conducting risk and vulnerability assessments of planned and installed information systems to identify vulnerabilities, risks, and protection needs. Activities include enterprise perimeter and internal vulnerability assessments and penetration testing against endpoints, servers and other supporting infrastructure. This program enables ISO to identify potential weaknesses or exploitable vulnerabilities that could result in unauthorized access or breach to systems or information;
- Developing systems security contingency plans and disaster recovery procedures.

Fairfax County CISO also provides leadership and expertise for cyber security initiatives in the Council of Governments member jurisdictions/ DHS National Capital Region.

Benefits

IT Security is an essential function to the integrity and operation of County government based on:

- Increased dependency upon technology
- Dynamic increase in cyber-attack activity world-wide
- Ensure the confidentiality, integrity and availability of County data and systems that enable County operations and provide essential services to constituents
- Ensure compliance with Federal, Commonwealth, and industry regulation
- Retain confidence of constituents, partners, and other stakeholders in properly handling sensitive information
- Minimize Federal or Commonwealth fines, industry financial penalties, or other revenue losses due to breach of sensitive information such as HIPAA or credit card holder data or unavailability of critical systems
- Safeguard the confidence in and image of County government.

A cybersecurity incident could degrade critical County agencies' services, cause financial damage, harm the County's reputation and ultimately harm citizens and businesses served.

The County's IT Security Program and Policy has been recognized by multiple industry and governmental organizations as a Best Practice, to include National Association of Counties (NACO), Center for Digital Government, Information Security Executive (ISE) conference, Federal government Cyber 7, and the Commonwealth of Virginia. Staff from DIT and ITPAC serve on the Federal Government's Cyber Security Symposium Planning Committee.

Mandates

Cyber security and the protection of sensitive information is a critical aspect of electronic data management and is regulated by multiple applicable compliance requirements throughout Federal law, Virginia Code, Industry oversight and County policy. Included below are links to applicable regulation requiring mandated compliance:

- Federal Health Insurance Portability and Accountability Act of 1996, Pub. L. No. 104-191 (1996),
- Code of Virginia §18.2-186.6. Breach of personal information notification
- Code of Virginia § 32.1-127.1:05. Breach of medical information notification
- Payment Card Industry (PCI) Data Security Standard
- Commonwealth Executive Order EO-39: Launching "Cyber Virginia" and the Virginia Cyber Security Commission

Trends and Challenges

There is an increasing trend and frequency of various types of threats conducted as cyber-terrorism, crime and thievery, identity theft and all types of organizations are targets. Critical Infrastructure Protection is also now a concern for IT Security professionals, as well as a key role in Continuity of Operations planning and disaster recovery plans. IT Security also has an instrumental role in the outcome of financial audits and rating agencies' determinations as well as roles on reviewing, assessing and advising on the impact of new regulations and mandates affecting technology services and electronic data. Another related trend for organizations is 'Cyber Insurance'. Other core issues for ISO include balancing data privacy requirements against open-government goals, keeping up with various related federal regulatory churn (federal and state requirements as well as government-to-government,) and government-to-business interoperability.

Also, the landscape of technology opportunities, the WEB and cyber security is dramatically changing with growth in the consumer markets for mobile devices, such as smart phones and tablets, to network-enabled industrial control systems (HVAC, Physical Access Control, lighting systems, supervisory control and data acquisition (SCADA) systems, etc.). 'Clouds' present more complex risk and challenges as these solutions are adopted. As product development transforms the enterprise-enabled landscape, the ISO will need to adapt to evolving threats targeting untraditional endpoints and data repositories. ISO anticipates a 5 percent increase in malicious code detections in FY 2016 and FY 2017 and a continued increase in the collection of electronic records related to agency personnel investigations, legal requests, and Freedom of Information Act requests. Recent changes in Credit Card industry standards will require the County to renew point of sale machines to use the chip technology, and the County to adopt other modern commercial payment apps.

A key challenge for IT Security is balancing ultimate protective measures against reasonable risk, and users understanding of the criticality and consequences of their actions and adopting a cybersecurity mindset.

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #133: Cybersecurity			
FUNDING			
Expenditures:			
Compensation	$766,478	$811,592	$849,295
Operating Expenses	430,319	744,361	316,783
Total Expenditures	$1,196,797	$1,555,953	$1,166,078
General Fund Revenue	$0	$0	$0
Net Cost/(Savings) to General Fund	$1,196,797	$1,555,953	$1,166,078
POSITIONS			
Authorized Positions/Full-Time Equivalents (FTEs)			
Positions:			
Regular	10 / 10	10 / 10	10 / 10
Total Positions	10 / 10	10 / 10	10 / 10

Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Number of Records Requested for Investigations	42	179	45	92	96
Number of Security Events	103	113	73	100	105
Number of Malware Detections	7,841,131	7,173,155	7,717,330	7,956,416	8,354,236
Cybersecurity Incidents that caused Loss of Production Data	0	0	0	0	0

The number of records requested for investigations are anticipated to rise in FY 2016 and FY 2017 due to the increased requests from Internal Audit, agency personnel, the Police Department, and the County Attorney. It should be noted that in FY 2014, there were an unusual amount of requests for email records related to litigation preservation that caused the substantial spike that fiscal year.

The number of security events held are anticipated to remain in line with prior year experience. These events will focus on stolen/lost devices, information handling, IT security policy violations and other IT security issues.

The number of malware detections are anticipated to rise in FY 2016 and FY 2017 due to the increased number and types of computer viruses.

Cybersecurity incidents that have caused loss of production data has been zero since FY 2002.

LOB #134:

COURTROOM TECHNOLOGY

Purpose

The Courtroom Technology Office (CrTO) LOB was developed in partnership between the three Fairfax County Courts (Circuit Court and Records, General District Court (GDC), Juvenile and Domestic Relations District Court (JDRDC)) and the Fairfax County Department of Information Technology (DIT). The CrTO was created to implement modern courtroom technology and automation for 40 operational courtrooms and related support offices. The CrTO coordinates research, and facilitates automation and technological enhancements throughout the court system to include the Courts, Office of the Commonwealth's Attorney, Office of the Sheriff, Fairfax Bar Association, and the Fairfax Law Library. The CrTO ensures that judges, support staff, and administrative personnel have complete and reliable access to information and the necessary technological support for high-tech trials and proceedings.

Description

The Courtroom Technology Office (CrTO) is a Department of Information Technology function created in 2007 supporting all three Courts, managed by a Courtroom Technology Officer, under the direction of the Chief Judge, Clerk of the Court, and the Fairfax County Chief Technology Officer. Core services for courtroom technologies include planning, design, implementation, maintenance and support for court proceedings. The CrTO provides expertise in the prevailing technologies and trends in courtroom management, knowledge of proceedings and protocols in all three Courts, including state legislative and judicial requirements.

The CrTO LOB was initially a discrete, specialized program with three staff, supporting the General District, Circuit and Juvenile and Domestic Relations District Court, focusing specifically on providing expertise and project management for courtroom technology for newly constructed courtrooms. Upon the successful completion of 14 new high-tech courtrooms, the CrTO activity expanded to include additional courthouse construction-related projects (26 renovated courtrooms, data center modernization, etc.), as well as directing numerous application projects, and supporting day-to-day IT operations for the courts. In 2014, CrTO also began supporting the technology needs of the Office of the Commonwealth Attorney.

The CrTO primary objectives in carrying out its work include:

- Improve citizens access to the courts
- Facilitate trials and hearings
- Share common resources
- Consistency, flexibility, adaptability, scalability

The CrTO ensures that judges, support staff and administrative personnel of the 19th Judicial Circuit have reliable access to the information they need and the technological support required for high-tech trials and proceedings. Technologies include:

- Courtroom Technology Management System (CTMS)
- Courtroom Digital Audio Recording (CDAR)
- Enhanced Courtroom Interpreting (ECI)
- Video Teleconferencing for video arraignments, remote testimony, protected witness, audio/video overflow monitoring, remote petitions and protective court orders
- Judge, Clerk, Attorney and Presenters Management Control Panels
- Electronic Wayfinding and Automated Dockets
- Public and Private Wireless Access, Mobile Workforce
- Virtually Connected Courtrooms - Towns of Herndon and Vienna
- Specific on-going projects for the courts including scanning and case imaging, automated civil enforcement processing, calendaring and reservation systems and bring your own device capabilities

Courthouse and courtroom technology must be closely aligned with state and local agencies to facilitate the flow of information to the Court system and to broaden the spectrum of information sources available to the Courts. The CrTO provides:

- Strategic planning for effective use of the courts' information resources
- Research, development, implementation and support of modern courtroom technologies
- Project Management for implementation of Courthouse and courtroom technological solutions
- Guidance to ensure compliance with County IT Strategic Plan and Corporate Enterprise policies and procedures
- A judicial and executive management forum for policy and decision-making via the Court Technology Executive Governance Board.
- Liaison and partnership opportunities between the Courts, County, Supreme Court of Virginia, and other jurisdictions
- Staff support to the Judiciary and affiliated court services-related organizations

The CrTO collaborates with the Agencies Software Solutions and Development Support, Technology Infrastructure, and Cyber Security LOBs in DIT and may draw upon those resources as needed. In carrying out its mission, the CrTO coordinates Court technology systems requirements of the Commonwealth of Virginia through partnership with the State's Supreme Court.

Benefits

The CrTO primary objectives in carrying out its work include: improving citizen access to the courts; facilitating greater efficiency and manageability in conducting trials and hearings; sharing common resources; and providing consistency, flexibility, adaptability, scalability for the associated technology solutions and resources.

Substantial benefits and opportunities have been realized by centralizing courtroom technology between the three courts and sharing resources and infrastructure. This LOB has leveraged limited resources and saved the County the cost of having to staff individual positions for each Court, and while resources are extremely limited compared to the mission and duties, has performed remarkably well. The technologies in the Courtroom have provided for:

- Greater efficiencies in trial proceedings
- Cost savings for some cases in travel for litigants
- Made the court more responsive to the needs of the increasingly diverse client population served
- Strengthened compliance
- Greater efficiency in handling of intake
- Supported the integrity of Court process and data
- Modernization to accommodate the broad consumer and business use of technology

The implementation of Court Technology solutions have also improved trial management, and provided savings for the County, the courts, attorneys, and litigants.

This LOB is considered a best practice by the Center for Legal and Court Technology (aka Courtroom 21 Project – College of William & Mary Law School), and is an active participant in Court conferences nationally. The program has also been lauded by the Fairfax Bar Association and has received the following honors:

- Governor's Technology Award, 2012 "*IT as Efficiency Driver, Court and County Collaborative Partnership Model*"
- VACO (Virginia Association of Counties) Achievement Award, 2012 Innovative County Program "*DIT Court Technology Model: Coordinated County and Courts*"
- NACO (National Association of Counties) Achievement Award, 2009 Best-In Category "*Courtroom Technology Management System*"

Mandates

This Line of Business is not mandated; however, the CrTO does support multiple court programs and services that are mandated.

Trends and Challenges

There are ongoing challenges relevant to the growth and changes in population and demographics to be served including Non-English speaking clientele; security and confidentiality of court-related information handling; and the rapid pace of change in technology and adoption of technology correlated to the law and legal proceedings.

There is a major challenge in keeping up with the required technology investments, and in providing adequate resources to support internal and external demands. Currently, 18 of 40 courtroom technology management system (CTMS) courtrooms require hardware replacement and digital refresh. An additional 11 courtrooms will be renovated and integrated with CTMS over the next three years.

The courts are highly reliant on the CrTO to be able to conduct technology dependent court trials and proceedings. Any lapse in technology slated for use to run a trial can contribute to continuances and rescheduling or other worse scenarios. To remain effective and to be able to maintain service level expectations, CTMS equipment lifecycle replacement schedules must make sense and can't be spread too far between cycles. CrTO technology is unique, and while newer solutions are tending to use more industry standards, special skills are still required for implementation and operations. Existing staff will not be able to maintain the pace of keeping up with the current inventory, changes in technology, support for additional courtrooms and existing field offices, and multiple on-going applications and non-courtroom related projects.

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #134: Courtroom Technology			
FUNDING			
Expenditures:			
Compensation	$498,595	$498,560	$505,240
Operating Expenses	239,657	298,880	295,000
Total Expenditures	$738,252	$797,440	$800,240
General Fund Revenue	$0	$0	$0
Net Cost/(Savings) to General Fund	$738,252	$797,440	$800,240
POSITIONS			
Authorized Positions/Full-Time Equivalents (FTEs)			
Positions:			
Regular	5 / 5	5 / 5	5 / 5
Total Positions	5 / 5	5 / 5	5 / 5

Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Number of Courtroom Production checks	4,996	4,950	4,975	5,977	6,867
Number of Help Desk Calls	642	878	1,982	2,388	2,500

Courtroom Technology is projecting an increase in both Courtroom Production checks (daily audio-visual and other system-related checks) and help desk calls as the operation attempts to keep pace with 600 users spread throughout the courthouse and 14 remote locations, and equipment to include 12 dedicated courthouse servers, 750 computers and more than 500 peripheral devices (printers, scanners, faxes, etc.)

The Fairfax Courts are highly reliant on the Courtroom Technology Management System (CTMS), which includes more than 3,000 integrated electronic system components in 18 courtrooms, Master Control Room, Adult Detention Center and Courtroom Testing Center. Non-Courtroom CTMS functionality are supported in 2 Jury Assembly rooms, 3 Jury Deliberation rooms, and multiple high-tech conference rooms. An additional 11 courtrooms are scheduled to be renovated over the next 3 years resulting in CTMS support for 29 courtrooms adding approximately 1,500-2,000 additional system components, an increase greater than 50% over current levels of activity. Existing staff resources (5.0 FTE) are at capacity supporting existing CTMS workload. An urgent need for additional technology support staff will be necessary to keep pace with future growth and workload demands.

In the Circuit Court alone, demand for CTMS courtrooms exceeds current availability. Efficiencies gained via CTMS courtrooms are experienced by all participants on a daily basis (Judges, Clerks, Attorneys, Citizens, etc.) and are validated by the waiting list to utilize a CTMS courtroom. Delayed responses due to lack of resources may cause courtroom disruptions, relocation of trials, and the potential of rescheduling a case.

The Court Technology Office is also involved in time consuming product research and evaluation, and multiple projects throughout the year to expand the functionality and capabilities of CTMS and other Court applications that include coordination with the Supreme Court of Virginia and other State and County agencies.

LOB #135:

HIPAA (HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT)

Purpose

The HIPAA Compliance Program is a specialized LOB that ensures that the provisions of the Federal Health Insurance Portability and Accountability Act (HIPAA) are implemented as appropriate within the Fairfax County Government. HIPAA is a federal law enacted by Congress in 1996 to improve portability and continuity of health insurance coverage; to combat waste, fraud, and abuse in health insurance and health care delivery; to promote the use of medical savings accounts; to improve access to long term care services and coverage; and to simplify the administration of health insurance.

Compliance with the law requires ensuring the privacy and security of "protected health information" and the transition of health claims transactions from paper-based to electronic forms. Under the law, residents and employees are provided with notice of the County's privacy practices regarding the handling of their individually identifiable health information. Employees are trained on appropriate policies and procedures related to the protection of health information in written, electronic, and oral mediums. Also required is a single entity point of contact for investigations and complaints regarding the entities' handling of HIPAA covered information.

Description

HIPAA is a county-wide function. To coordinate the County's enterprise-wide compliance with the law, the Board of Supervisors approved a HIPAA Compliance position in FY 2003. The County implemented the program initially at a county-wide level as a focused oversight function based on this industry-wide law. The HIPAA LOB is a single program that oversees and supports HIPAA compliance requirements for multiple HIPAA covered agencies and associated activities and data.

Since its inception Fairfax County Government covered agencies have incorporated HIPAA requirements in their business practices and operations, and responded appropriately in making operational changes to strengthen compliance. The HIPAA Compliance Coordinator has provided on-going analysis of HIPAA requirements aligned with related County programs; assisted covered agencies in updating related policies and procedures as necessitated by requirements and/or changes in HIPAA law; worked with covered agencies to ensure proper controls are incorporated in new initiatives and systems; conducted required periodic assessments and coordinated and reviewed the work of the third-party expert assessment firms; provided expert advice and information about inquiries; worked through investigations; implemented awareness; put HIPAA compliance language in County contracts for systems and services as applicable; assisted in the development and review of business associate agreements; developed awareness; worked closely with the IT Security Office and DIT areas for compliance in the HIPAA technology standard works with covered agencies

The Department of Information Technology provides support by implementing HIPAA compliant security requirements, ensuring the implementation of electronic data transmission (EDI) standards for health record and covered information such as reports, and ensuring modification of automated information processing systems for electronic health records compliance.

Benefits

HIPAA is a mandated requirement for any organization that handles medical records. The County has several agencies, Community Services Board, Health Department, and Fire & Rescue EMS that in their services mission are the stewards of client medical records, either directly and/or by third party providers (business associates) on the behalf of the County. Compliance with HIPAA supports the County's integrity in its responsibilities in providing client services thus confidence of the community, reduces risk exposure, and avoids costly lawsuits and administrative costs related to privacy breaches and operational miscues.

There is a portal on the County's website for information about HIPAA, program information and for the receipt of HIPAA complaints; other channels of communication are used such as phone calls, e-mails or written correspondence for anyone that has an inquiry, issue or needs assistance.

Mandates

This LOB is federally mandated. The percentage of this LOB's resources utilized to satisfy the mandate is 100 percent.

Federal Health Insurance Portability and Accountability Act of 1996, Pub. L. No. 104-191 (1996)

Trends and Challenges

Due to increasing national issues related to data privacy overall and practices to protect information and data, as well as the fast growth of technology advancements used in collecting and processing insurance and medical information, HIPAA continues to have an impact as a key function for the County. New supportive technologies include telemedicine, automated charts, digital images, and cloud services.

Major challenges include keeping up with the changing law, and incorporating HIPAA requirements in all related activities. These include ensuring required distribution of privacy practices notifications, facilities modifications for privacy, and ensuring that all staff having access to HIPAA covered information and data are knowledgeable and practice due diligence in all venues.

For example, although the Final Rule has been issued, DIT is still awaiting guidance documents on a number of items, including the Minimum Necessary Standard. When this guidance is issued, it may require a major overhaul in processes. Specifically, if the Department of Health and Human Services adopts the limited data set as the minimum necessary standard, it will require the de-identification of almost all PHI (protected health information) disclosed. Additionally, almost all HIPAA Process Manuals will need to be reviewed and updated at their two year anniversaries.

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #135: HIPAA (Health Insurance Portability and Accountability Act)			
FUNDING			
Expenditures:			
Compensation	$98,400	$100,653	$103,541
Total Expenditures	$98,400	$100,653	$103,541
General Fund Revenue	$0	$0	$0
Net Cost/(Savings) to General Fund	$98,400	$100,653	$103,541
POSITIONS			
Authorized Positions/Full-Time Equivalents (FTEs)			
Positions:			
Regular	1 / 1	1 / 1	1 / 1
Total Positions	1 / 1	1 / 1	1 / 1

Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Number of Complaints received/resolved/closed	6	5	7	7	7
Number of Breaches of PHI	4	3	3	3	3
Number of Inquiries received	8	8	14	14	14
Number of Business Associate Agreements reviewed	4	18	11	11	11
Number of Agency Consultations	12	6	29	29	29

The HIPAA Coordinator position is funded in the Department of Information Technology's general fund, reporting directly to the Deputy County Executive that has chief responsibility for information. Services primarily support the three county HIPAA covered agencies: The Health Department, Community Services Board, and Emergency Medical Services in the County's Fire and Rescue Department; however, consultation services are provided to other agencies that have/use health record information. Assistance with assessments, agency specific policy development, service agreements, audits, operational practices recommendations and awareness campaigns is provided, with specific metric data shown in the above table.

LOB #136:

TELECOMMUNICATIONS VOICE

Purpose

The Telecommunications Voice LOB in the Department of Information Technology (DIT) is a discrete, centralized county-wide program responsible for planning, designing, implementing, and managing the County's voice communications solutions and phone services county-wide for all agencies. This portfolio of products and services primarily includes phone systems, intercom systems, voice messaging; voice and video teleconferencing; 9-1-1 Center communications; and cabling, telecommunications circuits and hot lines provisioning including circuits for voice and data, wireless (cell/smart phone) contracts, in-building wireless coverage infrastructure, and Internet pipes.

Description

The Telecommunications Voice LOB, Voice Communications Services (VCS) branch, is a centralized county-wide program established as part of DIT in 1997. It is responsible for planning, designing, implementing, and managing the County's voice communications solutions, phone services, and underlying communications building and sites infrastructure for all agencies. The core responsibility is to manage the enterprise-wide voice communications (phone systems) platform and voice messaging system, including the McConnell Public Safety and Transportation Operations Center (MPSTOC) and 9-1-1 Center communication platforms, communications infrastructure and commercial circuits. In addition, this branch integrates the IVR (Interactive Voice Response) system and performs voice recording for Call Center applications for 20 agencies.

Also supported are intercom systems, voice and video teleconferencing systems and services; and, building wiring and cabling, telecommunications circuits and hot lines provisioning including circuits for voice and data, wireless (cell/smart phone) contracts, in-building wireless coverage infrastructure, Internet pipes, and wireless "hot spots" in Libraries, Rec Centers, and other locations. VCS also supports investigations regarding use of County telecommunications resources and performs traffic studies.

The VCS has sixteen (16) full-time positions - primary staff is located at the Government Center, with a dedicated presence at the McConnell Public Safety and Transportation Operations Center (MPSTOC) supporting the 9-1-1 and MPSTOC administrative systems and common infrastructure. Staff is responsible for the design, planning, implementation, management and support of the voice and data communications networks on a 24x7 basis. This service includes coordinating the provision and maintenance of all electronic (voice and data) communications for Fairfax County government and related agencies; managing and maintaining all communications equipment and services; designing and implementing communication features and applications; planning and managing the installation of new communication equipment and services, and evaluating emerging communications technologies.

The VCS staff also provide critical oversight for all new construction and renovation projects by coordinating technology requirements and design of building communications infrastructure for voice, data, and video including building security systems and wireless points, and developing specifications and supervising contractors with the Department of Public Works and Environmental Services, Department of Housing and Community Development, the Fairfax County Park Authority and the Facilities Management Department. The design, development and project management efforts are performed by telecommunications engineers and analysts using the latest technologies available in order to meet agency needs while aligning with County IT and security standards.

VCS has a huge task to manage the process for reviewing and approving carrier telecommunications bills, reconciling the inventory of services against the bills from all the activity that occurs monthly in the provisioning of services. The typical carrier processing lag time between new orders and disconnects showing up on bills several months later has been problematic. In FY 2016, DIT outsourced billing management review to a firm that had the ability to run the bills through their data analytics engine that identifies the anomalies and only submits payment advice for the validated services. This is a far more efficient and effective way of handling the cumbersome carrier billing process that many commercial sector companies have gone to instead of doing it themselves. In addition to paying bills, VCS provides information for the charge-back process to County agencies for services rendered.

Services are obtained through a variety of County and state contracts, depending on the specific service requirement and best cost alternative at the time. County and FCPS use each other's contracts and have joined sometimes in contract solicitations. In FY 2016, the County and FCPS worked together on the solicitation for a new wireless services contract. This netted the best available cost with agility built in for new service package offerings so that Fairfax can always have the latest and best pricing instead of being stuck in a long term contact at the original negotiated pricing package.

Services and support are provided to over 16,000 employees located at over 400 county facilities, office and individual equipment locations, including parks, firehouses, group homes, recreation facilities, police stations, SACC centers, health clinics, libraries, governmental centers, maintenance shops, and specialized end-points for sewers, alarm systems, and other utilities, etc. Staff work with agencies to plan installs and conduct moves/rearrangements and changes for office and staff reconfigurations and relocations as necessitated by business requirements. Other duties of the staff include working with vendors to perform research and development scheduled preventive maintenance and coordination of vendor repairs/replacements.

The Fairfax County Enterprise Voice Network was modernized in 2006 replacing the old legacy voice platform through a competitive solicitation process that had reached its usable life and lacked the tools and functionality of modern advancements. The current system platform consists of more than 16,000 telephone sets for County employees and provides county-wide internal communications over the County's private fiber network (I-NET), implemented during FY 2014 and 2015. Transition to the I-Net reduced the overall requirement for Telecom carrier service provider circuits connecting County buildings, thus major cost reductions were achieved and implemented in the FY 2016 budget. Enhancements were added to streamline caller applications for citizens to quickly reach the appropriate agencies, provide solutions for telework and integration of wireless telephones for mobile employees. Additionally, the new voice architecture registers all telephone sets to local public-safety answering point database to determine exact locations of 9-1-1 calls which satisfies Commonwealth of Virginia mandates. In addition to the Internet Protocol (IP) based Voice Network, there are over 4,000 independent analogue telephone lines supporting special purpose industrial equipment required for operation or legal requirements (e.g. elevators, etc.).

The VCS group continues to work with the Technology Infrastructure LOB on enhancements significantly improving access to County information and supporting County technology goals, while enabling greater efficiency and productivity, improving security and reliability, increasing capacity to support ongoing and future applications, and reducing operational and maintenance costs.

Benefits

The Telecommunications Voice LOB provides a countywide service that aggregates and leverages telecommunication assets and supporting infrastructure, providing the best overall acquisition, operational and maintenance costs. The centralized program is a key technology component that provides a specific service, but also integrates with the Technology Infrastructure LOB for the convergence of voice, data and video services that will net additional county-wide productivity improvements and cost savings. For example:

- Improved service levels to the public by empowering County employees with the technology to more expeditiously extract information to fulfill County citizen requests;
- Increased public satisfaction with government services and the attractiveness of Fairfax County to prospective businesses and residents by more quickly responding to constituent inquiries or business transactions saving valuable private and corporate resources; and
- Reduced staff time permitting redeployment of staff to higher value-added issues, such as increasing the number of customers served and/or providing improved services at a lower cost to County citizens.

The VCS solutions and services portfolio:

- Provides employees the ability to communicate via telephone to conduct business
- Allows for County employees to telework from home
- Provides teleconferencing services
- Provides caller identification for incoming call and to 9-1-1 Center
- Provides contact center functionality for high volume calls for citizens
- Provides call recording for call centers to ensure quality assurance
- Achieves lower cost circuit costs
- Provides redundancies for reducing system downtime

Mandates

As of July 2009, the state of Virginia established legislation to regulate 9-1-1 service as it applies to Multi Line Telephone Systems (MLTS) or PBXs (Private Branch Exchanges). Virginia requires enterprises and/or residential MLTS operators to ensure that when a user calls 9-1-1 on their system, ANI (Automatic Number Identification) and ALI (Automatic Location Identification) are provided to the PSAP (Public Safety Answering Point). The County meets this mandate by deployment of Redsky. Redsky provides ANI/ALI to the local PSAP which provides the exact location of the calling party. Also, the County meets the mandate for the hearing impaired through either TTY devices or the Virginia Relay Services, 711.

Trends and Challenges

The trend in the area of telecommunications is the transition from proprietary voice only system architectures to using industry standard software enabled functionality on technology industry standard server platforms, and convergence over a data network of voice and data messaging services. Through the investments already made, the County is positioned well and is in the process of integrating the voice and Microsoft messaging environments for a seamless, uniformed communications capability. Plans include a unified communications architecture for integration with the County's broadband data network and wireless carrier services so that agencies and users can access data and video through a variety of mobile devices securely – anywhere, and will also support use of personally owned devices as appropriate. (See Fairfax County IT Plan Section 2 for more information). The strategy to integrate wireless will also result in a reduction of desktop phones for some workspaces. The strategy will also further consolidate server infrastructure support. Another industry trend is for 'cloud' based telephony services. DIT is assessing next generation voice cloud services as a potential option at the next system refresh cycle.

Challenges include:

- Keeping pace with technological advancements and the resulting lifecycle upgrades as the industry changes rapidly
- Regulatory changes affecting the carrier market and related mandates
- The ability to drive down recurring costs without loss of functionalities
- Maintenance-related issues as more County facilities are added to the network
- Transitioning and integrating wireless applications and devices
- Transitioning required skills
- Next Generation 9-1-1

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #136: Telecommunications Voice			
FUNDING			
Expenditures:			
Compensation	$1,435,832	$1,383,559	$1,323,543
Operating Expenses	5,876,709	6,659,361	5,931,066
Work Performed for Others	(6,262,804)	(6,119,374)	(6,791,873)
Total Expenditures	$1,049,737	$1,923,546	$462,736
General Fund Revenue	$0	$0	$0
Net Cost/(Savings) to General Fund	$1,049,737	$1,923,546	$462,736
POSITIONS			
Authorized Positions/Full-Time Equivalents (FTEs)			
Positions:			
Regular	16 / 16	16 / 16	16 / 16
Total Positions	16 / 16	16 / 16	16 / 16

Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Number of Service Tickets	3,554	3,742	3,755	3,800	3,800
Percentage of Service Tickets Completed on Time	96%	95%	95%	95%	95%
Number of Repair Tickets	2,641	2,800	3,100	3,100	3,100
Percentage of Repair Tickets Completed on Time	96%	96%	95%	95%	95%
Telecommunications Cost	$3,141,269	$2,717,551	$2,102,060	$1,685,000	$1,600,000

The number of service and repair orders are largely stable with slight increases resulting from more staff integrating to the Avaya platform. During the past five years there were more than 4,500 new telephones added to the network. Service repairs include applications that are new to staff such as caller ID, call recording, system upgrades and patches, system recording tools, etc. In addition to service and repair orders, VCS received calls for instructions on directions for self-help menus such as voicemail setup and calls for proactive monitoring from Avaya's network operations center.

Since 2011, VCS conducted surveys and pulled data from the Infra ticketing system. This data shows that an average request for service and repair was completed on time in 95 percent of cases in FY 2015.

The transition from traditional circuits to SIP trunking provided savings toward recurring costs on the Avaya enterprise system. The reduction involved transitioning from Verizon to Cox and taking advantage of better rates for other traditional dial tone services that are not on the enterprise system. Benefits include:

- Lower cost for services
- Lower repairs for single data circuits than individual circuits at each site
- Redundancy built into service provider and county-owned network

LOB #137:

GEOGRAPHIC INFORMATION SERVICES

Purpose

Geographic Information Systems (GIS) is a specialized, critical foundational and increasingly prevalent technology platform, used across most County agencies and is integrated in many County systems supporting a wide variety of County business processes, information and analytical needs. The GIS LOB is a competency center of excellence with the highest level subject matter expertise for mapping data with various attributes based County land parcels in a number of visual formats. The team provides the high quality geo-spatial infrastructure, curated data, innovative analytical applications and products, mapping, web and mobile services to Fairfax County government agencies and the public that have made the substantial GIS utilization across County agencies possible.

Description

The GIS LOB is a specific, county-wide discrete program that is the official office for county-wide digital mapping and provides the County's GIS architecture framework, infrastructure and tools, the maintenance and reporting in numerous data layers. The GIS office maintains a range of technologies, related products and data types that provide the foundation for rapid expansion of GIS enabling new developments in both public Web and field operations. GIS staff provide guidance, training, and assistance to County agencies' GIS analysts in the use and enhancement of geospatial technology in County operations and information needs. GIS has a GeoPortal page on the County's Website that is a single location to access the growing number of GIS enabled web-applications available for use. GIS is also the office for the County's master address repository that maintains and provides address checks against several County systems reliant on street addresses in conducting business. Often times, street addresses may be truncated in older systems or other alias names may have been used. GIS was created as a key program in the Department of Information Technology at its inception as recommended by an expert citizen business group regarding technology (ITAG).

GIS develops maps for a variety of agencies and the public, and integrates GIS technology in County systems. Sustaining and growing an enterprise GIS that serves many different and dynamic agency business needs requires a broad and deep range of GIS data, services, tools, and expertise. To do that the GIS office has a number of diverse functions:

- **Maintenance, update and development of enterprise-wide curated data**: The GIS office manages and maintains the County's enterprise GIS warehouse which currently comprises over 16 Terabytes of GIS data. GIS creates, maintains and publishes the official County Property (parcel) and Zoning maps, updating them daily on the web. Those digital property maps now go back to 1960 and zoning to 1976. There are a series of other maps as well (e.g., soils, stormwater and wastewater systems) to total 45,732 online maps which are downloaded 14,000 times/month. The office also manages the update to the planimetric data (the most heavily used data in the warehouse), regularly acquires the oblique and ortho imagery which are widely used in other applications. Parcel identifiers are issued and maintained by GIS along with the mapping and quality controlling of County addresses and their history. Street centerline data are maintained daily and provided to the CAD/911 system regularly for dispatch and use in the 1,500 emergency services vehicles.

- **Streamlined data dissemination to staff and the public**: To maximize availability and usability of GIS data to the public and minimize the need to come to the GIS offices, the GIS office has made most of its map data, and an increasing amount of its imagery available on the Web. The map data are published as Open Data through the OpenData portal while 8 years of historic imagery (1937, 1953, 1997, 2002, 2007, 2009, 2011, 2013) are available for viewing and researching through the new Historic Imagery Viewer; additional years will be added over the next several years. Previously constituents would need to come to the Government Center to access any of this imagery. The GIS web applications now generate over 5 million service encounters/year and are reducing the need to travel to the GIS offices for data.
- **Fostering growth of GIS capabilities and expertise across County agencies**: GIS provides hands on GIS training to County employees to further their knowledge and skills through a 16 class curriculum. The Branch also provides direct GIS support to agencies whether to assist their GIS staff or support agency staff. In 2015 the office carried out 55 GIS special projects for agencies such as the Board of Supervisors, Department of Management and Budget, Office of the Commonwealth's Attorney, Office of Public Affairs, Department of Public Works and Environmental Services (DPWES), Department of Family Services, and Office of Elections. Some of these requests can be for complex or extraordinary situations where GIS can significantly help them and the solution requires special GIS skills or effort. GIS worked extensively with DPWES to reroute refuse collections and reduce the number of trucks required; it developed a web-based rover application for the Office of Elections to help speed response to precinct voting issues and also developed a Web-based GIS elections results reporting app. Additionally GIS hosts the annual GIS Day excellence awards to recognize GIS achievement in county agencies and build awareness of GIS' role in furthering agency missions. 2015 will be the 17th annual GIS Day event.
- **Enterprise system integration**: A number of key County systems now incorporate GIS functionality as part of their overall capability to add the spatial dimension to their data. The GIS staff have worked with other agencies to enable the implementation and integration of GIS. Currently, the Integrated Parcel Life Cycle System (IPLS), the Master Address Repository (MAR), DPWES Solid Waste Customer Service System, CAD/911, Land Development System/ MarkLogic, ICare, and IAS World all incorporate GIS capabilities. That number will continue to grow.
- **Enterprise software and system resources**: The GIS Branch manages the Enterprise GIS software licenses for most of the County as well as manages the GIS Data Warehouse including the Oracle Database component and the over 16 Terabytes of GIS data that the County now has. There are over 600 direct staff users of GIS and thousands of indirect users.
- **Application development and maintenance:** Delivery modes for GIS have evolved and grown. The GIS Office has lead the training for, implementation and maintenance of many of these systems. Currently the Web tools have become powerful, flexible and easier to use and some of the capability is available as Software as a Service (SaaS). GIS has implemented the GeoPortal on the County's web site and developed an ever growing number of web applications for constituents and staff. Some of the GIS Office's GeoPortal applications include the new My Neighborhood Report, Map Wizard, Historic Imagery Viewer, Virtual Fairfax, Digital Map Viewer, Police Calls for Service tool, Capital Projects, Road Maintenance (Who's Responsible), Leaf Collection areas, Deer Management and Elections Results along with many agency developed applications as well. The office has developed GIS applications for County Staff including the Geographic Exploration and Mapping Application (GEM), BOS Property Viewer, Cable and Consumer Affairs Verizon Build Out Mapper.
- **Public Safety/911 support**: The GIS Office provides all of the centerline and addresses used in the County's 911/CAD system which runs at the MPSTOC and all 1,500 emergency response vehicles. The system uses GIS at its core to optimize dispatch of the vehicles and provide situational awareness to its users. Data is updated daily and provided to the Department of Public Safety Communications (DPSC) when they update the map data. GIS also acquires the Oblique aerial imagery that is used 24x7 in the system to aid dispatchers. GIS also works with neighboring jurisdictions to provide centerline data to the 911/CAD system.

- **Emergency response services:** GIS staff provide 24x7 support to the Emergency Operations Center when activated and participates in the planning for emergency exercises and training. Staff are fully trained in the necessary federal emergency operations procedures (National Incident Management System (NIMS)). GIS technology is a principle feature to the County's EDGR system (emergency damage assessment situational awareness tool developed by DIT).
- **Involvement and coordination in regional, statewide and national initiatives**: Increasingly, the County interacts with its neighbors for important services like 911, environmental protection, and emergency response. GIS is essential in all of these activities because it provides the base mapping to visualize, plan and manage assets and resources. 911/CAD is a crucial driving force because of mutual and automatic aid across jurisdictional boundaries – GIS works with neighboring jurisdictions as well as the Virginia Department of Transportation (VDOT) to make centerline data interoperable regionally and state-wide. NextGen911 will be replacing current 911 services in the next several years and is wholly based on having interoperable GIS data across the National Capital Region – the GIS Branch is leading the regional GIS – NextGen911 efforts. GIS staff also manage the National Capital Region's Geospatial Data Exchange (NCR GDX) which facilitates sharing GIS data for emergency response across local jurisdictions. GIS staff also participate in committees setting national standards setting for NextGen911.

Benefits

GIS tools and data are directly available to the public via the County's web site, as well as embedded in internal systems used by County agencies to better deliver services to constituents. Benefits fall into the following categories along with some examples to illustrate the role that GIS plays:

Cost Savings

- GIS enables faster response 911/CAD calls since the closest vehicles are mapped and dispatched.
- Reduced field time for property assessments due to the use of oblique aerial imagery.
- Stormwater analysis costs are reduced by using planimetric and topographic data.
- Refuse collection costs have been reduced due to optimizing routing of vehicles with GIS software.
- Field collection of data using mobile GIS applications by the Park Authority has significantly decreased field time and positively impacted resulting work efforts.
- DPWES geovisualizes citizen stormwater pipeline complaints to better prioritize areas requiring rehabilitation.
- DPWES Wastewater Management Division uses GIS to spatially index as-built documents to enable quick location and delivery of documents to the public 24x7 through the web.
- On voting day the Office of Elections has response staff (rovers) across the County to respond to hardware, software, and procedural issues. They are using GIS to optimize the dispatch of rovers to the closest incidents to speed response times.

Enhanced Public Safety

- In addition to quicker vehicle response, GIS is used to analyze crime data in order to anticipate potential incidents and prevent them.
- Constituents are able to view current and historic 911 Police Calls for service in selected areas of the County for enhanced public safety awareness.
- Fire and Rescue has developed a suite of web applications for personnel to help in analyzing incidents, analyzing vehicle travel times, and perform training exercises.
- Police are constructing 3-D models of schools and in the future of malls, government buildings and other buildings of interest to better respond in emergency situations.

- Carbon Monoxide incidents occur daily in the County. The Fire and Rescue Department is using GIS to analyze incident patterns and craft prevention approaches.
- The Police Department uses GIS to analyze incidents of K-9 response to optimize the location of the units.

Enhanced Environmental Management

- Field collection of invasive species data by the Park Authority has positively impacted the response efforts to remove invasive species.
- Satellite imagery has enabled the DPWES Urban Forestry Branch to better manage the County's tree population and canopy and help to reduce stormwater runoff.
- DPWES uses GIS to optimize its resources in support of cleaning County streams.
- Special Flood Hazard areas are mapped by DPWES and made available via the web.
- DPWES Stormwater Management uses GIS to help evaluate the status, and compliance with its crucial Municipal Separate Storm Sewer System (MS4) permit.

Optimizing County Development

- The Department of Planning and Zoning regularly uses GIS to track comprehensive plan amendments, as well as zoning change requests and makes the data available to the public on maps.
- Planners can easily access existing land use for all of the County parcels for their planning work via the Integrated Parcel Life Cycle system.
- The Office of Community Revitalization used GIS to develop walkshed analysis of proposed improvements to the Seven Corners area.

Enhanced Constituent Communication

- Leaf Collection areas and schedules are readily accessible via online maps.
- Constituents can easily determine road maintenance responsibilities of all County roads via web maps.
- Fairfax Department of Transportation uses web GIS applications to show Transportation project priorities and enables constituents to mark up a web map to show areas where pedestrian safety can be improved.
- Park Authority has developed mobile web maps to help optimize information about and use of bike trails and general park trails (BikeFairfax and Fairfax Trail Buddy).

More Efficient Delivery of Human Services

- The Office for Women & Domestic and Sexual Violence Service programs use GIS to optimize distribution of their staff and services to areas of highest need.
- Neighborhood and Community Services uses GIS to analyze and view migration to and from parts of the County to help agencies better plan and target County services.
- Health Department used GIS to best locate a new health care program access point and obtain first year federal funding for the center.

Mandates

GIS provides data and mapping necessary to meet state mandates:

- Zoning Map – localities have to have an official map as part of managing their zoning requirements Code of Virginia §15.2-2233 & 15.2-2235
- Dam Break Inundation Maps – organizations that own state regulated dams must provide maps of inundation zones. Those maps are prepared using GIS. Code of Virginia §101.1-606.2
- All Virginia jurisdictions must provide e-911 services. GIS provides that street and address data used in the county 911/CAD dispatch system Code of Virginia §66-484.16
- The state requires that all properties, with exceptions, be taxed. GIS data and maps are a key component of the County's assessment process. Article X, Constitution of Virginia

Trends and Challenges

Budget pressure is a continuing challenge, which will drive the expansion in the adoption of GIS technology in agencies to carry out County operations more efficiently and cost-effectively. GIS already enables many County agencies to deliver services more efficiently and the number of services and agencies seeking efficiencies and innovations will continue to grow. Doing that will require having the software tools, data, platform and expertise to realize those benefits.

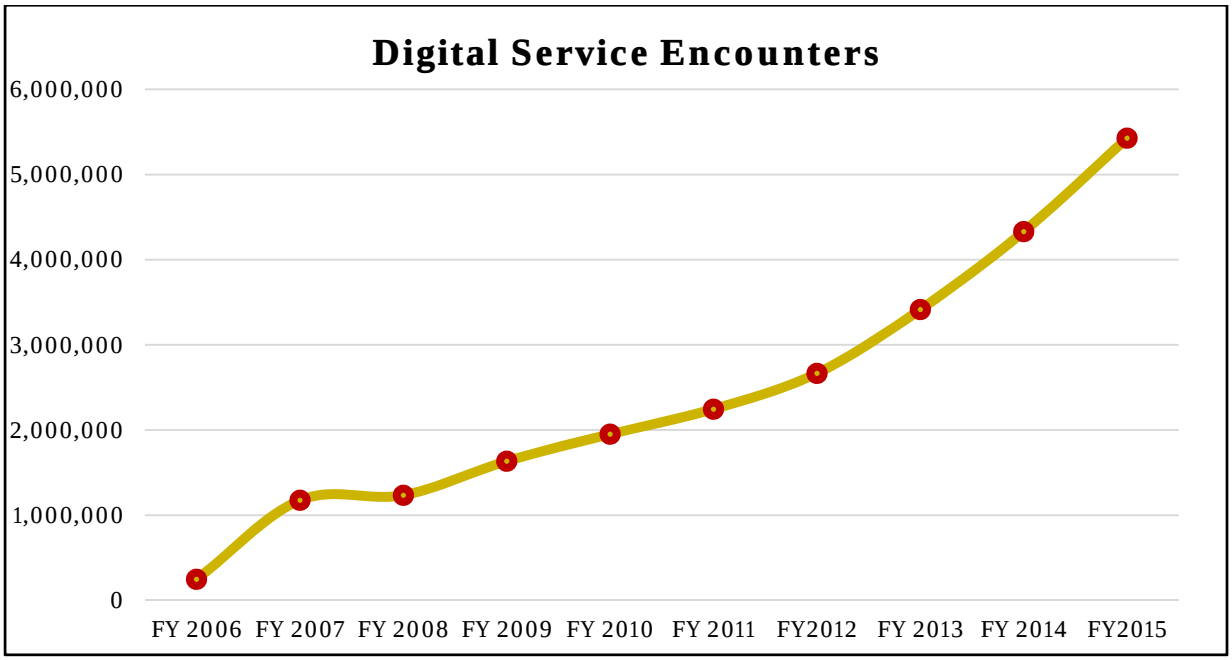
Competition for development across the National Capital Region will continue to grow and be driven by budget pressure which is not limited to Fairfax. As developers have a wide area to consider for growth, streamlining the local regulatory process will be essential in enhancing the attractiveness of a jurisdiction. Fairfax has undertaken a strategic assessment of its land development process and it is clear that there is a need to streamline a complex legacy process. Future processes will have to be digital, and be structured to easily feed key information to reviewers, other County agencies and residents. GIS will be an important component of a new/revised process, to include 3-D which is being used in an increasingly large portion of the worldwide development industry.

Fairfax County already has an aging and highly diverse population. Tracking and analyzing demographic data will help agencies plan for programs and services to fulfill Fairfax County needs. GIS has been and will continue to be an essential tool for County human services agencies as they face increasing and changing demands for effective services.

Public Safety demands will continue to grow and evolve. As the County continues its transition to an urban environment, population demographics continue to change and technology demands evolve at a rapid pace GIS will be an increasingly important and essential component. Today GIS is used 24x7 in the dispatch of public safety personnel. County public safety agencies (Police, Fire and Rescue, Sheriff, DPSC) use GIS to analyze incident trends, plan equipment and personnel placement, and speed incident responses. As the County becomes more urban, with larger, more complex buildings, location accuracy within buildings will become crucial to quick response. Today that capability is not available but it will in the future. GIS will be key to that, as will having 3-D building information from the land development process. Most significantly, over the next 5-7 years, the County (and National Capital Region) will transition to the Next Generation 911 system which is GIS based (as is the 911/CAD system already). NextGeneration 911 will provide more web features (text to 911, video, photo, more accurate incident locations).

The relentless expectation and demand for web-based and mobile and real-time data and services for the general public and ounty staff will continue. Increasingly County agencies are incorporating mobile technology to field crews to enable them to view current data, capture field data and have it be available in near-real time to other agency personnel. GIS is essential in mobile data collection since location is a core component of field operations. The public also wants data accessible and discoverable geographically via the web.

GIS provides data and a range of services for web applications. The use of these tools can be seen in the increasing use of GIS web services by the public and county staff. Figure 1 shows the steady increase in usage of GIS data via web and desktop applications, reflecting the increasing utilization of GIS data and GIS tools.



Open data is another growing trend in the industry. GIS recently made a range of County data available through the Esri OpenData portal and is experiencing growing utilization of the data and portal in just the first month with no publicity. These data are key in the development of third party web applications as well as enabling more detailed data analysis by constituents.

The jurisdictions that comprise the National Capital Region are increasingly interdependent for Emergency Response, NextGen911, Environmental Management and Stormwater management. Today Fairfax County is sometimes the emergency responder to locations within Arlington, Alexandria and Loudoun County, and similarly those jurisdictions are first response into some locations in Fairfax. Doing this requires shared, interoperable GIS data not just for Fairfax but the region. Similarly NextGen911 will require a standard, high-quality set of GIS data for the entire National Capital Region in order to direct 911 calls to the correct jurisdiction. Environmental management (particularly stormwater) requires GIS data of adjoining jurisdictions in order to carry out stormwater modeling and planning. Cost pressure and the demand for quicker and enhanced emergency services will continue. GIS is at the core of all of these regional interactions.

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #137: Geographic Information Services			
FUNDING			
Expenditures:			
Compensation	$1,707,331	$1,595,743	$1,626,365
Operating Expenses	268,751	247,791	402,507
Work Performed for Others	(12,386)	(9,156)	0
Total Expenditures	$1,963,696	$1,834,378	$2,028,872
General Fund Revenue	$34,148	$20,072	$23,088
Net Cost/(Savings) to General Fund	$1,929,548	$1,814,306	$2,005,784
POSITIONS			
Authorized Positions/Full-Time Equivalents (FTEs)			
Positions:			
Regular	20 / 20	20 / 20	20 / 20
Total Positions	20 / 20	20 / 20	20 / 20

Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Number of Digital Map Viewer Downloads	156,864	172,959	178,667	187,600	196,980
Number of GIS Digital On-line transactions	3,415,359	4,330,139	5,427,022	5,698,373	5,983,292

Use of on-line GIS transactions and downloading maps has increased dramatically. This shows that more people are using the GIS platform for visualized data, for example, supporting location of polling places, school attendance, Trail Buddy & Bike Fairfax, Police Event viewer, seeing election results by precinct, 3-D visualization of areas in Fairfax such as Tysons Corner, and downloading this valuable data for the public's use in creating custom purposed maps, any many more. There are over 1,000 layers of GIS data supporting all agencies, and about 45,732 pre-made maps. This includes 55 years of property maps, going back to 1960.

This is extremely efficient and cost effective for the county and constituents, reducing the need for users to come to the GIS office to get information and data since it available 24x7 from any computer. Printing costs are also reduced.

LOB #138:

ASSET AND POLICY MANAGEMENT

Purpose

The Asset and Policy Management group provides technology program policy, and governance support, acquisition, resource and fiscal management, and, administrative services for all the divisions, programs and services in the DIT. It is the responsibility of this LOB to ensure coordination of all programs, to provide administrative support, develop County technology policies, provide fiscal, human resource and logistics management, coordinate information technology audits, and manage the IT Investments Fund (10040) portfolio and processes, and regional inter-jurisdictional programs management.

This LOB provides support oversight for countywide information technology planning, standards, policy and procedure development, programmatic, business process and fiscal audits, and IT budgeting and fiscal management for seven funds and federal grants. It supports the work of the Deputy County Executive related to the information and innovation initiatives, Chief Technology Officer/Director of DIT, staffs the Senior IT Steering Committee and the Information Technology Policy Advisory Committee (ITPAC), which is appointed by the Board of Supervisors to review and advise the Board regarding the County's information technology strategy and direction.

Description

Asset and Policy Management is not an independent Line of Business (LOB); it is a single, consolidated administrative and resources support group for all divisions/lines of business (LOBs) in DIT, with several specific agency support activities. There are **no** other administrative resources directly within the technology program divisions and branches, and is organized for efficient execution of required functions and affective sharing of limited resources. For example, over the past sixteen years, responsibilities in fund management and fiscal accountability activities have doubled while resources assigned to the core work have remained at the same level.

The LOB includes executive management of the agency, including strategic planning to support the County's information technology needs, leadership and participation in senior management steering committees and boards; enterprise-wide and departmental policy development; executive oversight for special projects; regional initiatives and programs such as the Council of Governments (COG), National Capital Region (NCR) Interoperability projects and others; management of IT equipment replacement programs; administration of DIT's budgets, procurement, and financial accounting, human resources management and workforce planning; grant management for regional initiatives; Project Management oversight administration; coordination of audits (Internal Audit, Board of Supervisors Auditor; KPMG Annual IT audit, UASI audits); development of performance measurements; studies, and, awards programs, marketing and acceleration of best practice implementation of IT in government.

Resource Management

The fiscal management program is responsible for the preparation of expenditure plans and execution of the DIT budgets and grants which total approximately $125 million in FY 2016, including the General Fund, Information Technology Fund, Document Services Fund, Technology Infrastructure Services Fund and portions of Fund 40090 (E-911), the I-Net program appropriation transferred to DIT from Department of Cable Communications, and technology infrastructure tasks for capital construction projects in Fund 30010 (General Construction and Contributions). Revenues and expenditures are monitored and analyzed and required financial reports are completed and provided to staff. The financial team works closely with DIT's management, and County departments such as the Department of Management and Budget (DMB),Department of Finance (DOF), Internal Audit, Department of Human Resources, and the Facilities Management Department to develop budgets, perform financial monitoring, produce invoices and customer account statements, collect revenues, ensure compliance with federal and state requirements, conduct appropriate asset/inventory management requirements, and manage physical workspace and transport needs including the unique needs of the technology galleries, and coordinates the DIT employee

emergency response teams. Staff conducts vendor management, acquires, reviews, and analyzes DIT contract information and services which requires specialized expertise dealing with the fast changing technology industry provisioning business models and products. In addition, staff prepares the necessary correspondence and documentation to ensure that viable contracts are in place and are correctly utilized to minimize delays in materials and or service availability. Also provided is consulting support on major technology acquisitions, including formulation of requests for proposals, assessments of product and vendor viability, formulation and execution of negotiating strategies, evaluation of best-value proposals, and consultations on licensing models, pricing structures and other key terms and conditions of major contracts.

The human resources area provides personnel administration support, including payroll and processing of all personnel actions, workforce needs and succession planning, IT expert compensation studies, DIT employee training and development, internships, departmental awards events, policy compliance and employee matters. The contracts management activity supports program development, performance management and monitoring activities on behalf of the IT programs.

IT Portfolio Management
This group manages the County's Information Technology (Investments) Fund (Fund 10040) where major technology initiatives and projects with the highest priority for the County are budgeted. An IT program director with project and fiscal management experience conducts these activities and monitors, and reports progress of the portfolio to the Chief Technology Officer and the Senior IT Steering Committee. The IT PMO manages the expenditures process and provides guidance to the County agencies assigned project managers on establishing project and expenditure plans, works with Project Steering Committees and evaluates the overall utility and progress of the IT Investments Fund. Other activities include development of relevant comprehensive, strategic performance measures. The staff also supports the Senior IT Steering Committee, and the Board' Information Technology Policy Advisory Committee (ITPAC) activities.

Benefits

The Asset and Policy Management support function in DIT provides an efficient and cost effective consolidated practice for required fiscal stewardship and management for all divisions of the Department, specifically designed to increase business process effectiveness, and leverage resources instead of having staff resources assigned to each unit. While required segregation of duties is maintained in fiscal processing, staff are cross trained to assure coverage, consistency and that fiscal cycle processing schedules can be met. This also increases the valuable work time for the technology staff in reducing administrative overhead work.

Mandates

This Line of Business is not mandated.

Trends and Challenges

Trends in the area of IT solution acquisition, products and services are moving toward subscription and 'cloud' based services when appropriate which will influence the way IT is budgeted. The benefit is that automatic refresh can be built into the contracts and cost models, however, as ITPAC has advised, the County should proceed with caution as many firms that initially offer such services may end up out of business leaving customers without services, or get acquired by other firms that may alter the offerings and contracts going forward. Often such contracts are not compatible with government contract requirements. Also, moving toward subscriptions, while often lowering initial acquisition costs, can increase the County's ongoing operational costs. This phenomena requires specific contract expertise so the County is in the most advantageous position to take advantage of the new models.

Another emerging trend is in entering into contracts for IT commodities that change rapidly. Instead of specifying specific items, the trend is to contract with a vendor/provider's entire relevant catalogue of products and services. This provides far better agility and ability to more quickly obtain required technology products without having to go through inefficient and time consuming contract modification processes that often within a few months are already obsolete. In the past, overly cumbersome procurement processes have caused major project implementation delays and increased operational risk for downtime in the IT environments. The national trend is to find ways for increased agility in the IT procurements process to benefit both the supplier and customer, ultimately significantly reducing costs, and more and more, IT Departments who have the technical subject matter expertise are being given procurement authority. Several governments locally use this model for IT. Regardless of model, more agility is needed.

A major challenge is to keep up the baseline IT investment goals even in times of fiscal constraints. IT investments have been a cornerstone for County agencies to realize efficiencies and to be able to accommodate service demand growth. Fairfax is a best practice example among peers in the IT Portfolio Management area and the central IT investment fund process, and often times DIT has consulted with other governments that want to adopt this model which is a growing trend.

DIT has major challenges in recruitment and retention of human resources. It is becoming increasingly difficult to compete for contemporary IT talent with the current general governmental pay scales. Trends in government (there are committees looking at this in NACO and NASCIO) are working to develop separate, modern classification structures and flexible pay scales to be more competitive. For certain essential IT specialties, DIT is reliant on more expensive contractors where the job is not always best performed by contractor staff due to marketplace churn, and cyber security and oversight considerations. And for many new hires in the higher level expert position, the minimum offer is above mid-point. In hiring future generation workers, DIT will need to offer a more mobile workplace, less tied to traditional workplace management policies.

Finally, the DIT Fiscal area has and will continue to enhance internal business processes to effectively manage fiscal process with greater agility. For example, fiscal processing of chargebacks to agencies is a cumbersome drain on limited resources and is of little value in carrying out DIT's mission.

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #138: Asset and Policy Management			
FUNDING			
Expenditures:			
Compensation	$1,674,237	$1,953,565	$2,018,366
Operating Expenses	5,992,634	6,431,066	3,823,518
Total Expenditures	$7,666,871	$8,384,631	$5,841,884
General Fund Revenue	$0	$0	$0
Net Cost/(Savings) to General Fund	$7,666,871	$8,384,631	$5,841,884
POSITIONS			
Authorized Positions/Full-Time Equivalents (FTEs)			
Positions:			
Regular	31 / 31	31 / 31	31 / 31
Total Positions	31 / 31	31 / 31	31 / 31

Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Total $ spent on Procurement Card	$494,613	$509,237	$592,235	$651,459	$716,604
Unique PO documents processed	1,909	1,660	1,606	1,700	1,700
Invoice payments made/Value (in millions)	3,411 / $72.6	3,149 / $71.0	2,743 / $75.4	3,000 / $75.0	3,000 / $75.0

DIT is pushing more transactions to P Card as appropriate which increases processing efficiencies and accuracy. For example, use of the P Card for telecomm invoices payment has reduced time required in the past, thus saving potential late fees from the vendors.

DIT has a growing portfolio of specialized contracts associated with IT, however the use of national cooperative contract vehicles have reduced the need for some individual Fairfax IT contracts. Nonetheless, the overall number of discrete contracts is projected to stay in the current range as there are many IT specialty areas where these cooperative-type contracts are not an option.

LOB #139:

E-GOV / WEB PUBLIC ACCESS TECHNOLOGIES

Purpose

The e-government program is the official, centralized county-wide competency center for the County's public access, on-line government platform, Web venue, and standards for all County agencies. E-Gov develops and maintains systems that provide essential information and key services to citizens through publicly accessible online and mobile platforms, supporting the County's mission to provide convenient, efficient, effective and timely information and transactions with government, 24 hours a day, 7 days a week. Utilizing concepts of e-business and e-commerce, the e-government program facilitates the connection between citizens, the government, and back-end business systems. Further, e-government provides the County powerful and streamlined venues to improve efficiencies and meet the growing demand and expectations for constant interaction with the government.

Description

The e-Gov program, the Public Access part of DIT's overall strategy for 'Digital Government', provides the official county-wide platform for the County's Internet presence for interacting with citizens, businesses, and the general public for information and interacting with agencies. E-government provides the public with responsive and flexible alternatives for obtaining information and services and to allow residents to conduct business with the County at anytime from anywhere. The fundamental premise is to build a "government without walls, doors, or clocks" – that is, provide access to information and services 24 hours a day, seven days a week from the constituents' home, office or anywhere else.

The e-Gov/Web Public Access Technologies group in DIT work with County agencies and other public and private sector entities to improve County accessibility, business operations and accommodate the growing variety of services and needs. E-Gov provides the WEB infrastructure, search and content management technologies, application development standards and protocols, integration with Social Media channels, mobile apps development, URL administration, promotes the development of on-line services, and plans for next generation technologies. The team is the expert group within DIT to support and participate in reviews of the work of the analysts in working with County agencies to replace and/or improve their major systems capabilities, with nearly all IT projects requiring WEB based and mobile architecture. The team provides guidance and coordinates the work of over 250 agencies' based staff assigned to work on their agency's WEB pages and e-Services. The e-Gov team works closely with the Office of Public Affairs (OPA) for over-all look and feel, use of Social Media, and enhancements for customer experience.

The four key platforms comprising the County's e-government program are:

- The **Fairfax County Web Site**, located on the web at www.fairfaxcounty.gov. The County site currently includes over 23,000 pages and about 90 interactive applications, with more than 60 agencies participating and extensive integration with social media tools/applications. The website has on average 43,155 visitors per day and more than 1.5 million visits per month.
- **FairfaxNet**, the County's intranet portal for agencies internal information, forms and e-service.
- The official **Fairfax County Mobile App** is available to download for free on Apple's iTunes store, Android Market as well as from links through the county website. Since 2011, there have been 20,600 purchases (or downloads) of the app.
- **Interactive Voice Response (IVR)** is available 24x7 to interact with citizens and provide additional option for conducting business with the county after regular business hours. The telephone callers can select information and services from audio menus via mobile or landline. There are a total of 17 interactive voice response applications that serve 1.4 million people since FY 2005.

In addition to the direct e-government channels, this group is responsible for the development of the County's application development methodology and advancement and lifecycle development methodology for all other DIT groups; County's intranet website FairfaxNET and applications; Service Oriented Architecture, meta data structures and business intelligence; CRM (Customer Relationship Management) strategy and projects; and contributes to regional and state interoperability and data sharing initiatives.

The e-Gov group also works with the Fairfax County Public Libraries (FCPL) and the Department of Cable Communications and Consumer Services (DCCS) for the overall view and strategy of all open-government channels, public computers, and video streaming the county has in its toolkit to facilitate access and information to the public. A steering committee of agencies reporting to the Deputy County Executive over the key information agencies including DIT, DCCS, OPA, and FCPL gives input to strategy and the development of new channels that further the value and effectiveness of the program. This long standing goal is further enriched with the County's mobile apps which place government in the palm of the constituents' hands enabling instant connectivity to their government from anywhere at any time in a conveniently accessible platform to reach a larger and wider user base.

The technologies are consolidated under one management team. Many of the same information look-ups and business transactions are available on all channels, integrated on a single platform architecture, with seamless connectivity to state and federal e-government programs and services. This provides a holistic solution to making service available to all constituents regardless of their ability to own technology. Capabilities also include secure electronic payments capabilities through certified third party payments portal, with consolidated payment services across the e-government channels.

Future enhancements will include additional interactive and social media applications, modern information access with intelligent enterprise search capabilities and Web content management (WCM) which provides a set of tools to allow for more active content contribution from agency staff allowing agencies to quickly add or update information without the need for technical expertise. The pre-defined WCM templates will ensure consistency of the presentation layer (i.e., Web, Tablet, Smartphone, etc.) as well as automatically ensuring compliance with ADA and other mandates. Workflow components with the WCM software will ensure the integrity of the quality assurance and approval process. DIT is also incorporating voice recognition into the IVR system, where appropriate.

The e-government group is leading the countywide initiative for a centralized, accessible, and contextualized **Open Data** portal which will offer citizens a better way to access and use public information, making citizen and government collaboration easy. This portal will also provide a seamless system for government agencies to not only set goals, but measure their impact against data, perform broad analysis, and share results with the public. Because of the power of electronic data interchange and associated implications, these technologies are receiving more scrutiny of lawmakers to ensure privacy and protections. DIT expects additional requirements to avoid inappropriate penetration and attacks to maintain the security and integrity of the e-government environment as e-government initiatives are implemented.

The e-government staff is committed to adhering to both the dictates and spirit of Americans with Disabilities Act (ADA) accessibility guidelines and mandates. The addition of all new information areas and business functionality will include ADA compliance as a principal focus.

The County's e-government programs are provided by a combination of internal staff and contracting support with specialized expertise and skills. County staff performs approximately 80 percent of the work. Contract services are used on an as-needed or special projects basis. For example, County staff will use contract services to assist in the implementation of the new web content management system, and in converting approximately 23,000 pages to conform to the new information architecture and design. Contract services were also used for the development of several web applications. It is anticipated that this mix of internal staff with contract support as required will continue. The site is available 24x7 and the staff of the branch respond to emergency outages on an "on-call" basis.

The increased reliance on e-government programs to deliver County services require 24x7 availability and support. Public Access Technologies began as one of the principle capabilities in DIT's Enterprise Systems Division in 1998, and evolved over the years to a strategic program as the utility of the Web became mainstream for government. Today the program is supported by a single staff shift on-call. The essential nature of the program demands hard examination of the staffing, budgetary and infrastructure implications to keep it vital.

Benefits

The County's e-government program is considered a best practice in government, being recognized by national organizations, and in government and technology publications and journals. The program directly contributes to the County being named Top Ten including the number One Digital County and Best of the Web multiple years since 2000. Officials from many Countries throughout the world have visited the County specifically to gain insight on how to establish a good e-government program.

E-government is the hallmark of the benefits obtained through solid planning and investment in information technology, providing the catalyst for a change in the way government operates, in many County agencies. Specific benefits include:

- Enable citizens instant connectivity to their government
- Empowers constituents' by providing them the benefit of getting services and information 24 hours a day, 7 days a week from anywhere at any time by delivering information in a more conveniently accessible platform
- Promotes better service delivery by engaging and encouraging collaboration with citizens
- Online streamlined processes improves County's efficiencies
- Convenience and flexibility of conducting online transactions
- Mobile apps enhance the adoption of online governmental services by citizens by reaching a larger and wider user base
- Agencies have achieved savings and increased productivity through e-services, and have been able to serve the growing population with fewer resources
- Funds have been collected faster and with greater accuracy
- Reduced the need for constituents to drive to the County Government Center to do business, thus also contributing to environmental stewardship goals
- Enables transparency and open-government
- Enables the County to be responsive to its digitally savvy citizen and business constituencies.

Mandates

This Line of Business is not mandated.

Trends and Challenges

Digital innovation is key to business priorities, in government similar to that of the consumer services industry. With explosive growth in IT technologies, there is a constant need to enhance the website and update the back-end systems and applications to keep up with changes.

- Incorporating and embracing social media trends has become essential. At the same time, ensuring security and data integrity on all e-government channel is crucial.

- The expectations that come with high performing, high visibility website/applications with no downtime increases both staff and budget resource requirements.
- Mobile technology is here to stay and DIT needs to keep "mobile first" when considering any development needs.
- Open Government and providing citizens with usable, accessible data.
- Engaging and encouraging collaboration from constituents to form a citizen-centric government through e-government channels and social media incorporation.

IT research firms predict that by 2018, more than 25 percent of new IT projects in the traditional enterprise will be built on Web-scale architectures. Trends include:

- Open Any Data strategies
- Web hosting and platforms for digital innovation will continue to go toward 'cloud', the government trend is the 'hybrid' cloud strategy
- Citizen e-ID
- Advanced, pervasive and invisible analytics for actionable insights to customers
- Blending physical and virtual worlds

Challenges:

- Restructuring resources to allow for 24x7 support
- Integrating Open Government concepts into agencies' core mission and operations
- Obsolete legislation that prohibit or limit digitalization
- Obsolete IT acquisition that is not agile

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #139: E-Gov / Web Public Access Technologies			
FUNDING			
Expenditures:			
Compensation	$1,931,623	$1,540,488	$2,011,385
Operating Expenses	293,110	294,368	224,496
Total Expenditures	$2,224,733	$1,834,856	$2,235,881
General Fund Revenue	$0	$0	$0
Net Cost/(Savings) to General Fund	$2,224,733	$1,834,856	$2,235,881
POSITIONS			
Authorized Positions/Full-Time Equivalents (FTEs)			
Positions:			
Regular	13 / 13	13 / 13	13 / 13
Total Positions	13 / 13	13 / 13	13 / 13

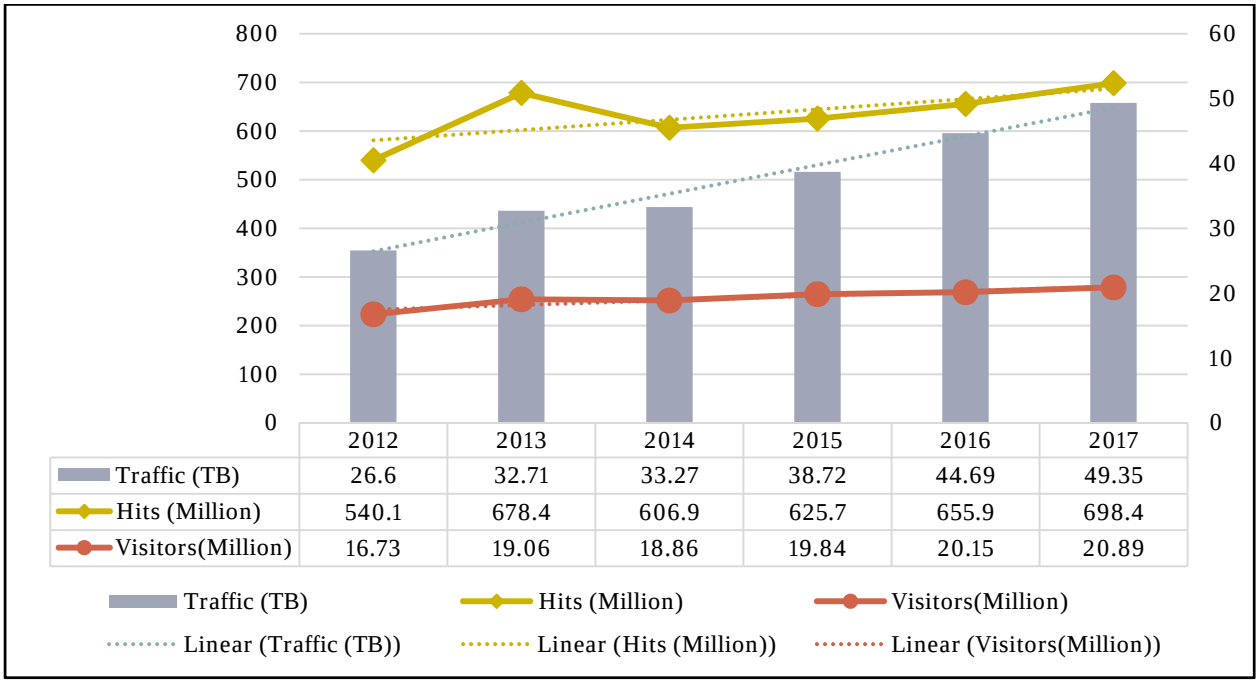
Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Number of Hits on Public Website	678,400,000	606,900,000	625,700,000	655,900,000	698,400,000
Number of Visitors on Public Website	19,060,000	18,860,000	19,840,000	20,150,000	20,890,000
Number of Transactions on Public Website	1,101,036	3,774,408	2,420,738	3,581,556	$3,868,080
Percentage of revenue collected	7%	17%	14%	10%	10%

Strategically, DIT employs a broad strategy that uses technology and policy to enable cohesive public access to information and services through the use of contemporary web-based and communication solutions. People and groups also have many options and forums in which to engage with County government and programs. The e-Gov LOB also supports the County's mission to provide convenient, efficient, effective and timely information and transactions with government, 24 hours a day, 7 days a week through publicly accessible online and mobile platforms. Further, e-government provides the County powerful and streamlined venues to improve efficiencies and meet the growing demand and expectations for constant interaction with the government. New concepts of e-business and e-commerce platforms for citizen interaction with the county is continually implemented to support and encourage the explosive growth of online engagement.

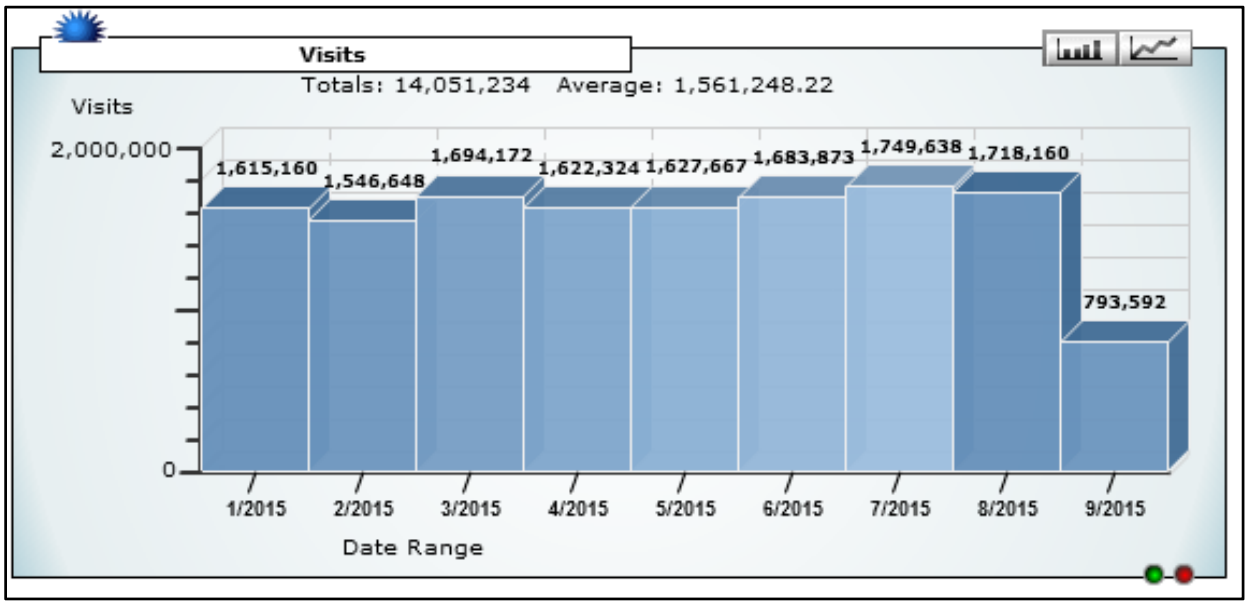
It should be noted that the FY 2014 Actual Number of Transactions on Public Website was impacted by automated programs causing one-time data irregularities which have been addressed through additional security measures.

Public Website Yearly Usage Totals & Future Projections

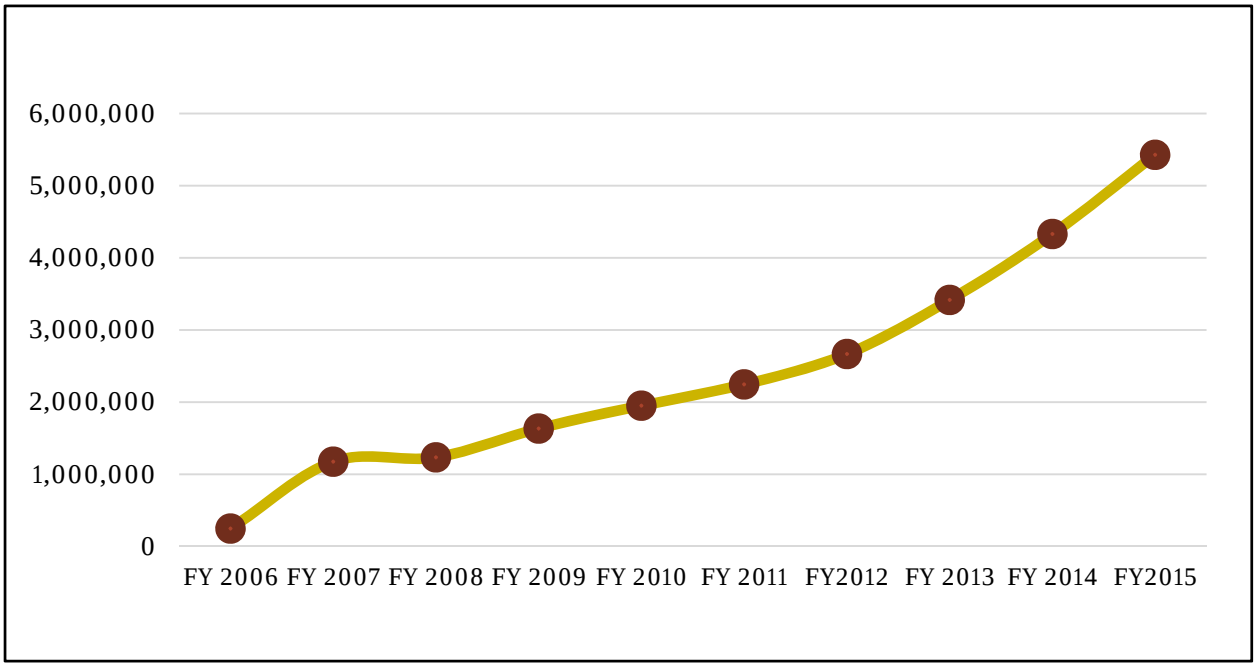


	2012	2013	2014	2015	2016	2017
Traffic (TB)	26.6	32.71	33.27	38.72	44.69	49.35
Hits (Million)	540.1	678.4	606.9	625.7	655.9	698.4
Visitors(Million)	16.73	19.06	18.86	19.84	20.15	20.89

Public Website Unique Visitors – 2015



Digital Service Encounters - 2015



LOB #140:

AGENCIES SOFTWARE SOLUTIONS / DEVELOPMENT SUPPORT

Purpose

The Agencies Software Solutions and Development Support LOB is responsible for software and solutions development and maintenance for County agencies' core applications and data reporting on all technology platforms. It provides technical leadership in the planning, design and architecture/ configuration and data structure phases of system development, working with agencies in understanding their business needs in determining solution design whether a total custom build or implementing a Commercial-Off-the-Shelf (COTS) or Software-as-a-Service solution (SaaS cloud). In that work, this LOB conducts business process and systems analyses, develops programming logic and computer code and applies in-depth technical and theoretical knowledge and experience in solving highly complex architectural design problems associated with the business and associated legislative and other legal and statutory requirements.

Description

Within this LOB, DIT has a center of excellence team with trained staff experts on the SAP enterprise resource planning (ERP) application. This is a highly unusual phenomena, whereby many organizations with major ERPs systems rely on expensive consultants to perform post implementation on-going normal support. According to SAP, Fairfax has been able to implement and run both a large county and school system on a single instance of SAP ERP, an extremely efficient and low cost environment per user. Gartner Research is writing a white paper highlighting Fairfax County's achievement. Ongoing work can be performed to include required upgrades and turning on functionality can be done in-house with minimal augmented contractor support.

Some of the key staff knowledge, skills, and abilities regularly provided include project and systems implementation planning and estimating, change management and enhancement prioritization, implementation, translation of requirements to specifications for solution solicitations, technical negotiation of contract terms and conditions to protect the County's interests, technical project management.

In addition to the portfolio of production applications supported, this LOB also supports a continuous-improvement technology investment program that modernizes systems, and plans for the acquisition and implementation of new systems when existing systems reach end of life. These technology professionals analyze business requirements and determine the appropriate technology options to meet those needs. They provision multiple technical approaches, development platforms and methodologies, and solutions needed to support a diverse enterprise with the 50+ departments in Fairfax County government.

Applications developed and supported by this LOB integrate with the County's award winning e-Government and GIS programs. The analysts and programmers apply business intelligence and data analytics tools to improve data mining and decision support capabilities. They apply interface and integration tools and utilities to provide seamless interoperability between disparate systems and data and transactions. Due to organizational centralization, the County's computer applications support is both leveraged for efficiency and highly effective. Staff are allocated to systems and projects as needs dictate, for both business, data and technical knowledge requirements, and project management.

Directly supported systems are stable, perform reliably, pass the scrutiny of multiple audit functions, and meet the core mission requirements of the many agencies supported. The financial, procurement, human resources and tax systems are reviewed annually by the external audit process for adequate controls.

Staff supporting this LOB regularly evaluate business process impacts, assist in reviewing alternatives, propose resolutions, and implement resolutions to problems. Staff are also very involved in the development and technical review of multiple Request for Proposal (RFP) documents that are supported by the annual IT investment portfolio. Significant value is added as staff work continuously to leverage and extend this financial investment by finding synergies and efficiencies, such as having multiple departments with similar business needs utilize the same system. The staff in this LOB also serve as the Technical Project Manager for major projects and in that work, are the subject matter expert lead and work with the Technology Infrastructure and Cyber Security LOBs for determining the underlying solution architecture and supporting infrastructure plan.

Both federal and state regulations mandate that Fairfax County report and provide information to numerous federal and state agencies and databases. These application development staff work closely with agencies to fulfill these requirements. Many examples of this include the public safety and human resources areas, including: update of the Virginia Compensation Board's Local Inmate Data System (LIDS) database from the Sheriff's Adult Detention Center Information System (ADCIS) to ensure correct prisoner reimbursements from the state; update of the Virginia Crime Information Network (VCIN) and subsequently the Federal National Crime Information Center (NCIC) from the supported Police Records Management System (PRMS) consisting of numerous databases to enable accurate queries by other law enforcement jurisdictions; provision of mandated Incident-Based Reporting (IBR) statistics to the State Police also from PRMS.

Following the Board of Supervisors' overall charge for IT government "without walls, doors or clocks", many of today's applications, data mining and transparency, and information lookup queries are provided to citizens 24 hours a day, 7 days a week. Even though DIT application development staff work full workdays, many of them are also available after hours and on weekends to provide critical operational support for certain applications and during deadline periods which result in heavy business transaction activity. Certain public safety and critical functions such as the adult detention center and the County website Internet applications require 24x7 IT applications support.

Samples of in-house application development primarily completed by County staff include the Human Services Resource Guide (HSRG), Automated Systems for Integrated Services Teamwork (ASSIST), the Registration system for therapeutic recreation programs (TRACERS), the Victim-Witness System, adoptions System for Circuit Court, Court Services Court Appointed Attorney system to appoint and pay attorneys, warning ticket process and system for the Police Department, Jail Management system, and others. Other major applications supported include the Personal Property Tax system, the Integrated Parcel Lifecycle System (IPLS), Zoning and Planning System, LDSNet and the Plans and Waivers system for DPWES – Land Development Services, the Child Care Management System, Interactive Voice Response system applications, Master Address Repository, hundreds of interfaces between County internal and external systems, and multiple electronic document management and imaging systems for a variety of agencies.

Staff also provide system solutions architecture, reporting, version implementation, and testing and integration services for many commercial-off-the-shelf (COTS) applications. Some examples of COTS software applications supported include: directly supporting the FOCUS SAP application for Finance, and Procurement (used by both the County of Fairfax and Fairfax County Public Schools), and SAP Human Resources/Human Capital Management, Real Estate CAMA System; Harmony Social Services System; Plan Submission, Inspections, Permitting and Complaints Management System (FIDO); Library Card Catalog and checkout system (Sirsi); Police Records Management System; Credible Electronic Health Records for the Community Services Board; and the Customer Relationship Management (CRM) software used by several agencies, including the Board of Supervisors, to track issues, conduct constituent correspondence, track complaints and events, and provide assistance and answers to citizens.

Benefits

Centralized support of information systems, applications, and data provides IT service staffed with IT subject matter experts that can have both knowledge in County business and technology-specific skills which can be portable in being assigned to various tasks, resulting in better overall utilization and lower cost instead of IT resources being dispersed throughout agencies and not effectively coordinated. The Board appointed Information Technology Advisory Group (ITAG) of County leadership, citizens and IT industry experts advised that maintaining separate organization focus to be a "serious impediment to effective technology utilization". The establishment of the central DIT organization has been beneficial in that:

- Centralized planning and prioritization of all medium to large application development projects
- Leverages the allocation of IT project funding investments by requiring multiple departments with similar business functions to utilize the same information system (where this makes sense)
- Optimizes use of IT resources, knowledge and expertise and achieves efficient use of software maintenance resources and cost
- Holistic view -prevents duplication of independent systems for the same core purpose; transforms data into information for better management decision making across systems
- Leverages repeatable processes for development and reporting
- Standard methodology and consistency for automating business processes and transactions for more predictable customer service outcomes
- Departmental resources can focus on business needs, thus allowing better use of staffing in departments; allows departments to achieve new customer service and transaction processing efficiencies by utilizing new systems and technologies
- Offers convenience and flexibility for agencies to meet their mission-critical business initiatives by focusing on business value
- Allows fluidity with business changes and requirements
- Enables active user involvement and representation by providing high visibility which results in better business engagement and improved customer satisfaction.
- Leverages customer preferences resulting in a higher-quality product
- Allows quick assembly of the correct resources to development and project efforts tapping readily available technical skills

Mandates

While the Agencies Software Solutions and Development Support LOB itself is not specifically mandated, the application development software and systems and enhancements do support many mandated reporting functions for multiple departments across the County. The LOB is critical for the efficient and effective operation of and services provided by the County government.

Trends and Challenges

Industry trends in software applications is toward 'cloud' based solutions, also referred to as Software-as-a Service (SaaS). This commercial business model, however, is based on the ability for customers to use functionality available in the service without modification. These solutions still require customer involvement to conduct the customer specific configurations, manage data, do specialized reporting, and to ensure that interfacing to the 'cloud' is operable from the customer's IT enterprise. Many County business apps have significant state mandated legislative requirements that are unique to Virginia, thus often times requiring significant changes. This is why DIT still develops certain solutions for agencies as commercial offerings are often not available or feasible. ITPAC has advised DIT to proceed with caution in going to cloud solutions. Another issue is that the SaaS clouds also provide the underlying server infrastructure which is part of the annual cost, thus unless the preponderance of apps are outsourced, there are minimal cost savings achieved.

All applications whether COTS, SaaS, or developed must be WEB and mobile ready, and with integration to Internet capabilities as appropriate for best reach to the public and user experience

Challenges in the market and for DIT include:

- Rapid pace of change in technology industry; often times shortly after contracts are awarded, the firm is acquired by another larger firm and the level of commitment to the just implemented solution is at risk.
- Each year, business departments are regularly required to do more with less, and this increases the demand and expectation upon LOB resources to constantly implement more change in applications (many business functions can only be more efficient with investments in information technology; cannot also make large cuts in IT investments needed to achieve further business efficiency).
- Demand for a more seamless user experience across all devices (mobile and wireless apps)
- Demand for more systems integration with many other systems
- Big Data – the ability to mine data for management decision making and predictive analytics
- Faster systems development and implementation cycles requires more agile application development processes
- Greater security focus to protect and secure data within the application requires this to be a higher priority in application development
- Departmental expectations of high performance, high visibility, and high availability; 24x7 applications with no down time increases demands upon both staff and budget resources
- Need to invest new application development tools and techniques training for staff
- Consideration of new application development platforms and how those opportunities apply to the County and the required changes in staff skillsets (i.e. software as a service; cloud computing, etc.).

A major challenge is to be vigilant in promoting the use of more enterprise like solutions that multiple agencies can use, versus the tendency for agencies to believe that they can go on their own and that a vendor specific product they found meets their needs and a simple 'plug and play' is all that is needed to implement. There are multiple instances where this has been problematic. The ultimate effect has been that risk and costs have been higher to fix the poor solution, to include delays and residual compliance problems. Also, often times this phenomena occurs based on special grant funding initiatives. Another major challenge is that agencies tend to not want to go through business process reviews and change processes to take advantage of new solutions, and/or also look across their silos to be sure that cross-agency processes can be enabled with new technology.

Finally, in this arena, there are some specialized expertise requirements that require salaries beyond the traditional County classification system. Prior studies conducted suggest a separate scale for IT professionals to help achieve competitiveness with the Northern Virginia technology industry marketplace, to have in place a reasonable amount of employees to lead work.

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #140: Agencies Software Solutions / Development Support			
FUNDING			
Expenditures:			
Compensation	$8,306,511	$8,142,601	$8,279,865
Operating Expenses	155,522	574,030	741,005
Total Expenditures	$8,462,033	$8,716,631	$9,020,870
General Fund Revenue	$0	$0	$0
Net Cost/(Savings) to General Fund	$8,462,033	$8,716,631	$9,020,870
POSITIONS			
Authorized Positions/Full-Time Equivalents (FTEs)			
Positions:			
Regular	91 / 91	91 / 91	89 / 89
Total Positions	91 / 91	91 / 91	89 / 89

Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Number of Major Applications Developed	72	43	62	45	55
Number of Application Maintenance Activities	273	251	296	305	270

The teams in this LOB support the core operations of the County for over 400+ County agencies' business specific and enterprise-wide computer applications for public safety, public health, human services, revenue and taxation, and land development, finance and accounting, purchasing, payroll and human resource management, libraries and facilities management and many others. Contained within these applications are all of the critical business rules and algorithms and fees structures and approval conditions to support ongoing critical County operational and customer service needs. The teams also provide assistance for hundreds of small agencies' developed Access and SQL databases.

LOB #141:

TECHNOLOGY INFRASTRUCTURE

Purpose

The Technology Infrastructure LOB is responsible for providing and maintaining the core, underlying technology infrastructure environment supporting all Fairfax County agencies and programs for IT (applications and data), and communications capabilities. The enterprise platform technologies infrastructure defines and provisions the technical components including servers, technology platforms, devices, middleware integration software, operating systems, data storage, and interfaces, other software tools and equipment used to maintain technical operations and applications installed in the County's Enterprise Data Center and at other data galleries. The County established a strategic approach to building agile enterprise infrastructure architecture by consolidating and standardizing IT resources, implementing scalable and elastic infrastructure components, moving toward service-based technologies, and automating processes while ensuring visibility, security, and accountability. The mission includes enabling continuous improvements - the evaluation, designing and implementation of emerging infrastructure technologies and concepts seamlessly, enhancing functionality at the most efficient cost.

This LOB is in the DIT General Fund agency, and is the sister LOB to LOB #302 in Fund 60030, Technology Infrastructure Services. Together these LOBs comprise a single line-of business; they are not mutually exclusive in delivering the service, both are necessary and joined for a single, foundational service.

Description

The Technology Infrastructure LOB is a single program, however funded out of both the DIT General Fund, and the Technology Infrastructure Fund. It provides the electronic host and pathway to County IT resources for both the Citizens and employees. While supported out of the two funds, DIT considers this a single line of business because all components are required for the technology infrastructure to perform.

This narrative addresses the services performed from the General Fund portion of the line of business, referred to in DIT as 'Platform Technologies' with these specific discrete activities:

- Server environment engineering
- System Integration and middleware
- Enterprise-wide e-mail, business productivity and messaging systems (Microsoft)
- Database analysis and management
- PC replacement program management and desktop device configuration
- FOCUS Infrastructure management (County and FCPS)
- Mobility Center and Remote Access infrastructure

Each of these technology areas requires highly-skilled resources with specific subject matter expertise. Multi-prong resource strategy includes a combination of continuous opportunity for training County staff who are key to providing services with industry provided staff augmentation and best practices managed services from a variety of firms.

The Technology Infrastructure division and branches were established as a core part of the Department of Information Technology at its inception. Over the years, it evolved from a mainframe centric environment mostly supporting legacy corporate applications (financial/procurement/budget, payroll and e-mail systems), and some agency based business systems applications in Human Resources, Police, Fire and Rescue, land development systems, records systems, tax systems, and related data. The current virtualized server environment is an internal 'cloud' hosting over 700 applications and 500 databases supporting all County agencies.

DIT's mission is to lead the response to changing technology in order to deliver an enterprise infrastructure that is agile, scalable, dependable and compliant, while enhancing Fairfax County government cost effectiveness and efficiency. The vision is to continuously look for ways to leverage information technology to stimulate the development of an integrated environment that promotes an open, collaborative, and unifying culture throughout the County. To ensure continuous delivery of quality services in a cost-effective and resource-efficient manner, Fairfax County's technology infrastructure was designed with the flexibility to respond to the County's evolving technology and business requirements, and to take advantage of new trends that provide improvements in operational efficiencies and cost. Today it allows for all employees to access their payroll and benefits information, e-mail, and personal/shared network storage drives with their job related files and data.

The County's IT environment builds on an enterprise architecture that includes industry standards, open systems, the web, cyber security, and tools that support a variety of needs and diverse portfolio of internal and external systems including 'cloud' offerings as appropriate. The supporting infrastructure foundation was designed to ensure the integrity of transactions, data and optimum system performance. Strategic planning, governance and program management assures inclusion in decision making and implementation of relevant products, and effective solution delivery at a fully leveraged cost.

The operational goals for areas of support which the Platform Technologies LOB in "*keeping the lights on*" are to provide a high degree of performance and resilience, and at the same time, reduce operational costs, improve utilization of IT assets.

Strategic goals include keeping pace with technology evolution that is responsive to county business requirements for all programs in a rationalized approach with emerging infrastructure technologies/concepts to foster:

- Seamless integrated systems/services
- "Greener" IT - Utility computing
- Enhanced collaboration and self-service
- Cloud computing and Web Services
- Platform consolidation
- Enhance Interoperability within agency clusters & with other jurisdictions

With the County's server consolidation and virtualization effort in FY 2011, Fairfax County's platform architecture was reduced from over 1000 servers to an average target ratio of 60:1, an on-going effort for even greater footprint and overhead and support reductions at improved performance. Listed below are the services/projects that are critical for the core technology infrastructure services being delivered to county end users.

- **Enterprise-wide User Support**
  - Mobility and Collaboration
  - Remote Access
  - Mobile Device Management (MDM)
  - USB Mobile Devices
  - Business Productivity Solutions- Office 365

- Unified Communications – Skype for Business
- Secure File Sharing
- Anti-Virus, Malware, and Web Security
- Content Management

- **Servers and Desktops**
  - Virtual Machines (VMs)
  - Server Operating System (OS)
  - PC Operating System Upgrades
  - Web Browser Upgrades
  - PDF/forms solution

- **Databases**
  - SQL Databases
  - Oracle Databases

- **Enterprise Support Services and Applications**
  - Enterprise Secure Solutions
  - User Management Solution
  - Active Directory Federation Services
  - Configuration Management
  - Virtualization
  - System/Application Performance Management

Benefits

The centralized Technology Infrastructure service has delivered significant important benefits as envisioned by the Board of Supervisors in their establishment of the Department of Information Technology (DIT) in 1997, namely - consolidated, shared use IT resources to achieve optimum performance with reduced overall cost in County IT.

Infrastructure projects have been and continue to be centered on the following strategies for an overall benefit in use of IT:

- Automation of Processes for increased productivity of County business operations
- Standardization of IT
- Consolidation and Simplification of IT to increase efficiencies and reduce the total cost of ownership (TCO) of IT
- Mobility to enable users to perform County business from anywhere reliably and securely
- Leverage Energy Efficient Computing
- Moving to Shared Services and Other Consolidation
- Adopting Self-Service resulting in increased business productivity and user satisfaction
- Ensure Visibility, Security, and Accountability
- Building a Culture of Agility

- Keeping systems available, operational, and secure

County end-users are able to perform their day-to-day tasks using a best in class IT infrastructure, equipment, software, and services that are up-to-date and secure, and the equipment is protected against failure by extended warranties-enhancing employee productivity.

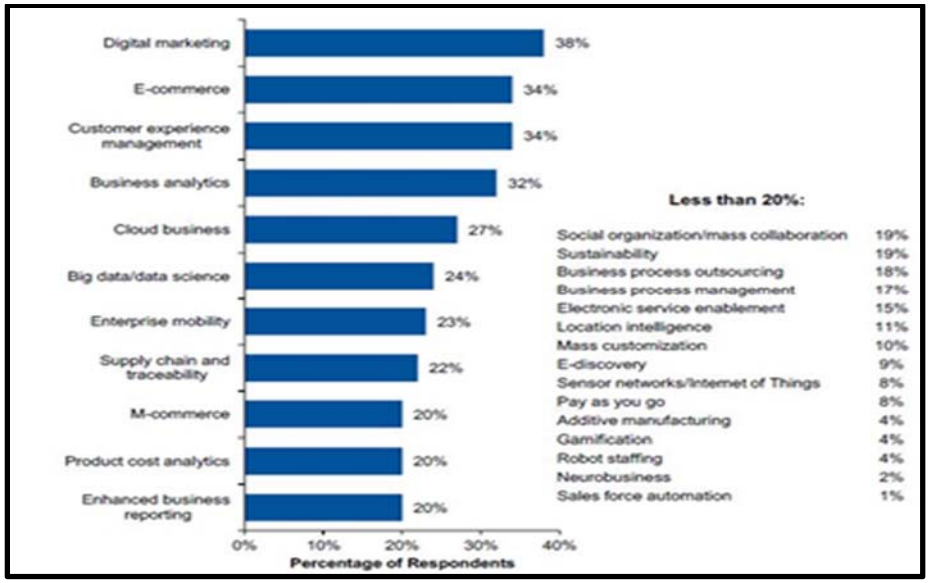
Mandates

While not mandated, this central core service is essential, supporting County mandated services and programs.

Trends and Challenges

Many organizations have spent decades trying to push "IT costs" down in the mistaken belief that IT is somehow an entity unto itself, as opposed to an intrinsic part of almost every enterprise activity. Organizations which are focused on reducing IT costs as opposed to maximizing enterprise performance will have difficulty seizing digital opportunities. It is being seen that many organizations, both government and commercial, are operating with absolute caps on IT spending in the enterprise. The first risk associated with such caps is that if the enterprise grows, IT resources will be focused increasingly on run-the-business activities, meaning that investment in new enterprise capabilities will be starved. The second risk is that demand for new capabilities in most enterprises doesn't go away simply because IT's budget is capped, so the spending doesn't recede; it migrates to other areas of the budget, where decisions are often made by individuals with little to no prior experience with information security, scalability, or life cycle management. IT spending decisions made without IT management is less likely to be organized and funded according to enterprise priorities, and even less likely to be designed and built to support efficient operations at scale.

The opportunity is for Fairfax County to recognize that participation in digital business continues to require investment and that identifying the best investment opportunities and moving quickly offers long-term strategic advantages to the County.



GARTNER: Most Important Technology-Enabled Capability Investments over next 5 years

With explosive growth in IT technologies, there is a constant need to enhance the County's infrastructure and expand offerings, which enable scalability, mobility, increased collaboration, and elasticity to keep up with the changes. Incorporating mobility and cloud based computing services, automation, and self-service has become essential. The expectation of a high performance infrastructure with minimal downtime increases the need for both staff and budget resources.

- Mobile technology is here to stay and the County needs to keep "mobile first" when considering any infrastructure or technology needs.
- IT evolves quickly, life cycles of equipment can be as low as 18 months.
- The constant need to consume more information stretches the ability to keep up with the bandwidth and performance tools needed for an acceptable user experience.
- Service contracts can become costly as the need for 24x7 reliability comes into play, with the expectation now of zero downtime.
- Modern Building Automation Systems to support HVAC, Lighting controls, Access controls, and Internet Protocol (IP) based surveillance camera systems continue to grow rapidly in both new construction and remodels as the County strives for energy efficiency.
- The internet of everything. Almost all new devices of any kind require either wired or wireless network connectivity to function. Each employee now may have numerous IP based devices to complete their job, thus straining the Enterprise network resources.

Challenges

Challenges and opportunities are fueled by expectations from the County's highly digital constituents and business community to interact and conduct business with the County utilizing contemporary technology and web-based capabilities that enhance information, communication, and transactions in a variety of formats, and enable transparency, access, engagement and open government. An environment of rapid change and the need for responsiveness together with finite resources, highlights the importance of thoughtfully considered deployment of IT trends, that embrace supportable standards and agile IT enabled services, solid investment strategy and governance.

The County's IT capabilities must (as is the case with any large sized county which requires citizen-driven engagement and citizen services) be contemporary, flexible, scalable, secure, and environmentally conscious with the ability to respond to new goals, dynamically changing service and operational requirements by various agencies and the public. The major challenge is to continually evaluate the dynamically changing IT industry and carefully choose options that have an appreciable lifecycle, are sustainable and allow for agility while managing costs.

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #141: Technology Infrastructure			
FUNDING			
Expenditures:			
Compensation	$2,204,003	$2,638,303	$3,479,251
Operating Expenses	2,162,323	2,782,358	2,529,058
Total Expenditures	$4,366,326	$5,420,661	$6,008,309
General Fund Revenue	$0	$0	$0
Net Cost/(Savings) to General Fund	$4,366,326	$5,420,661	$6,008,309
POSITIONS			
Authorized Positions/Full-Time Equivalents (FTEs)			
Positions:			
Regular	35 / 35	35 / 35	35 / 35
Total Positions	35 / 35	35 / 35	35 / 35

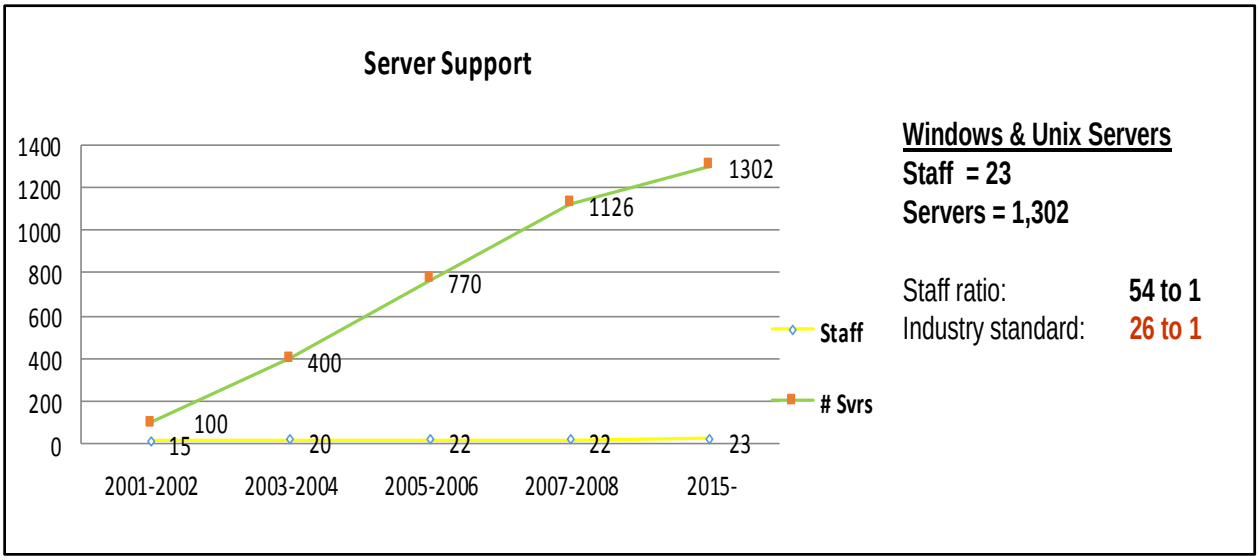
Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Number of Physical Servers	694	138	70	65	60
Number of Virtual Servers	592	988	1,066	1,200	1,300

In the ever-escalating world of technology, Fairfax County has continued to maintain its effectiveness in lowering its total cost of infrastructure operations of IT on an on-going basis by doing more with less. A part of this is consolidating the number of physical servers required to house County IT systems and applications. In 2008, DIT managed 1,100+ physical servers. Costs of managing physical servers include hardware costs, software costs, data center rack space, power and cooling, as well as personnel to manage the installation, maintenance, and troubleshooting physical hardware.

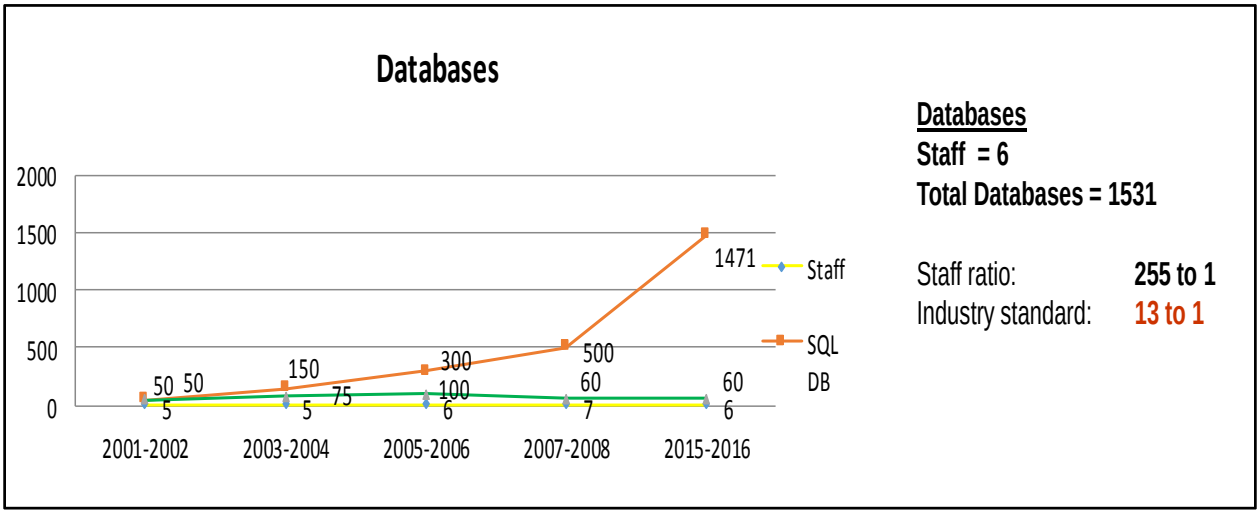
The County has standardized its infrastructure on a virtualized platform, and consolidated over 1100+ servers to a virtual environment which has reduced the County's overall cost of IT. The total number of physical servers used today is 70. The number of physical servers is continuing to decrease, and the number of virtual servers is increasing.

It is a common misconception that the less number of physical servers requires a lesser number of IT support personnel for the management, maintenance, and day to day operations of the infrastructure. This is not the case. While DIT has increased efficiencies in managing the environment itself, the growth overall in technology assets, applications and new technology to be supported continues to grow, requiring specialized skills. DIT effectively transitions staff to these new needs. For example, while the technologies created (server virtualization) allow one physical server to be partitioned into multiple virtual server machines, the skills, resources, and time required for the management of the infrastructure is either the same, if not more, than it was in the past.



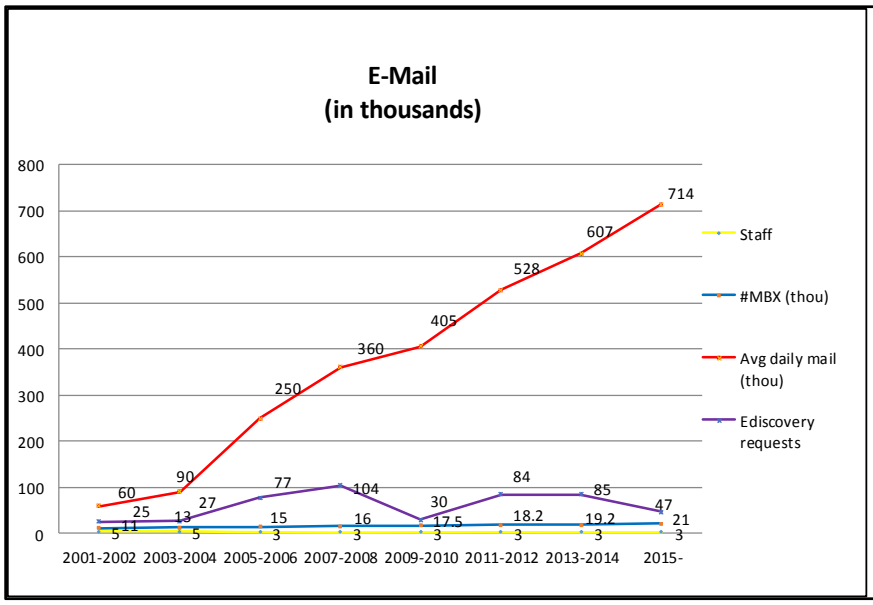
Windows & Unix Servers
Staff = 23
Servers = 1,302

Staff ratio: **54 to 1**
Industry standard: **26 to 1**



Databases
Staff = 6
Total Databases = 1531

Staff ratio: **255 to 1**
Industry standard: **13 to 1**

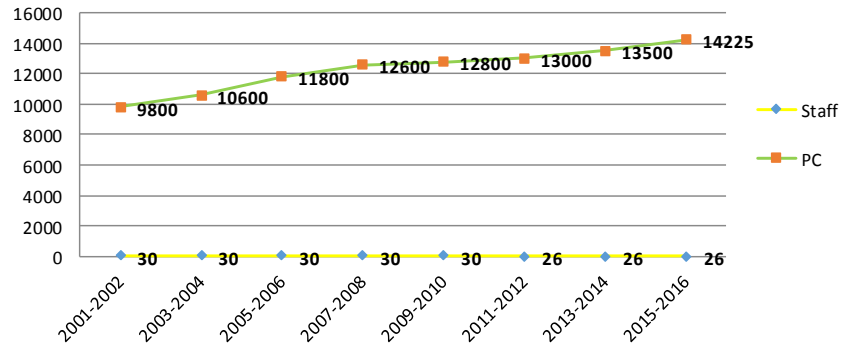


E-mail traffic:

21,000	**mailboxes**
714,000	**per day**
3,570,000	**per week**

Staff ratio: **7,000 to 1**
Industry standard: **500 to 1**

Searches (e-discovery & FOIA)



PCs 14,225

Staff = 26 (across 5 regions)
Staff ratio: **547 to 1**
Industry standard: **300 to 1**