

SECTION 3

DIT PROGRAM AREAS

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SECTION 3 DIT PROGRAM AREAS

3.0 TECHNOLOGY FOCUS BY PROGRAM AREAS

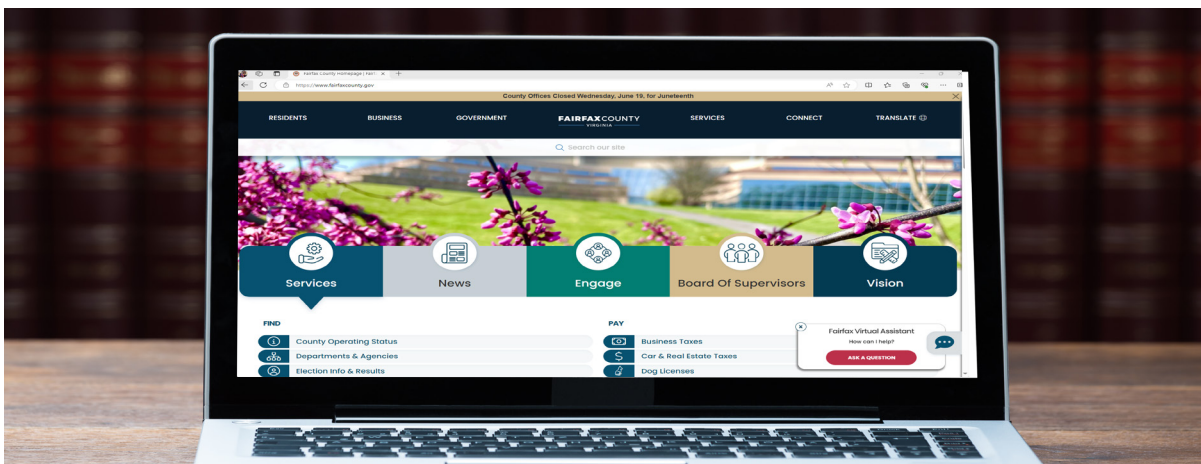
The Department of Information Technology (DIT) strategy is internally structured by Program Areas. These Program Areas are domain driven and comprise a logical grouping of projects under them. Implementation of these projects are key to ensuring each Program Area is realizing stated DIT Strategic Goals and in turn enabling the overall Countywide Strategy. The following sections provide an overview of DIT's Program Areas.

3.1 DIGITAL GOVERNMENT/E-GOVERNMENT

The Digital Government/E-Government (E-Gov) initiative, a foundational program, supports the County's goal of a "government without walls, doors, or clocks." The overall goal of the program is to bring the County's many channels closer to its constituents and businesses, providing services in a more efficient way. At the same time, it implements the policies and procedures that integrate all platforms, both for Internet and Intranet, to create a transparent and innovative government. It also creates a governance plan to include digital security and privacy issues. The program provides the technical basis to create a data-driven environment that is built on an engagement model which utilizes open data, analytics, and personalized engagement to create a transparent service delivery that encourages users to participate. It enables County agencies' operational efficiency, mobile workforce, emergency management and Continuity of Operations Plans (COOP).

The E-Gov program develops and supports the architecture, web infrastructure, and application framework for over fifty agencies on the Web, other public channels, and internal Web portals. This includes the public website, <https://www.fairfaxcounty.gov/>, online services, mobile apps, social media, web-based applications, Interactive Voice Response (IVR), Cable TV, and the County's Public Access sites in Libraries and Access Fairfax sites, to provide a unified access point to County information and services. The Department of Information Technology and Office of Public Affairs jointly work on design, navigation, content management and social media integration aspects of the web site.

The E-Gov program supports enterprise web application development and provides technical oversight to web developers and programmers. In addition to continuous improvements of the website and deploying new services, transactions and social



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media, the strategy also includes Customer Relationship Management (CRM), and Web Content Management (WCM) tools for comprehensive, integrated service options to engage and create a partnership with the community in a collaborative way. Popularity and use of E-Gov capabilities continues to expand. Here is a sampling of significant metrics:

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Website Visits	16,314,450	17,821,929	20,382,549	29,671,925	21,195,770	18,460,390
Facebook Reach	66,317,648	76,617,759	95,088,315	60,581,636	75,887,345	59,027,322
YouTube Views	318,264	375,514	762,880	622,533	709,403	271,496
County Residents on Nextdoor	166,136	217,033	272,198	334,658	365,561	390,360
Twitter Reach	62,923,888	65,362,561	75,283,983	66,521,480	50,517,822	48,312,273
TOTALS	146,202,082	160,616,168	193,802,945	160,130,024	149,465,324	126,461,841

Table 1 - Number of visits, views, impressions made with Fairfax County's social media.

The overall digital government program supports Board priorities regarding public engagement, and other County initiatives associated with technology innovation in public service including, land use, Next Generation 9-1-1, Health and Human Services Integration Initiatives, mobility, and transparency.

The County has achieved much success and acclaim for its E-Government focus in integrating the Web and IVR platforms to offer a wide variety of channels for online public access to services and programs, and its success in incorporating social media capabilities in a thoughtful way that enhances service delivery. Fairfax County has consistently received national recognition from the Center for Digital Government as one of the top-ranking localities in the US, placing in the **top ten** for the past fifteen years.



The E-Gov program continues to work with the Commonwealth of Virginia, regional partner municipalities, and federal government agencies in interoperability of common service portals and developing web service standards to enable cooperative access and seamless integration of information and services regardless of the origin or the source.

WEBSITE

Fairfax County's public website at <https://www.fairfaxcounty.gov> has been an extraordinary success and has received numerous national and local accolades over the years. The modern, topic-oriented Fairfax County website showcases an enhanced business delivery model, with improved search engine optimization and eliminates data silos thereby promoting transparency on the County's website. The County's innovative use of technology combined with user-friendly website design

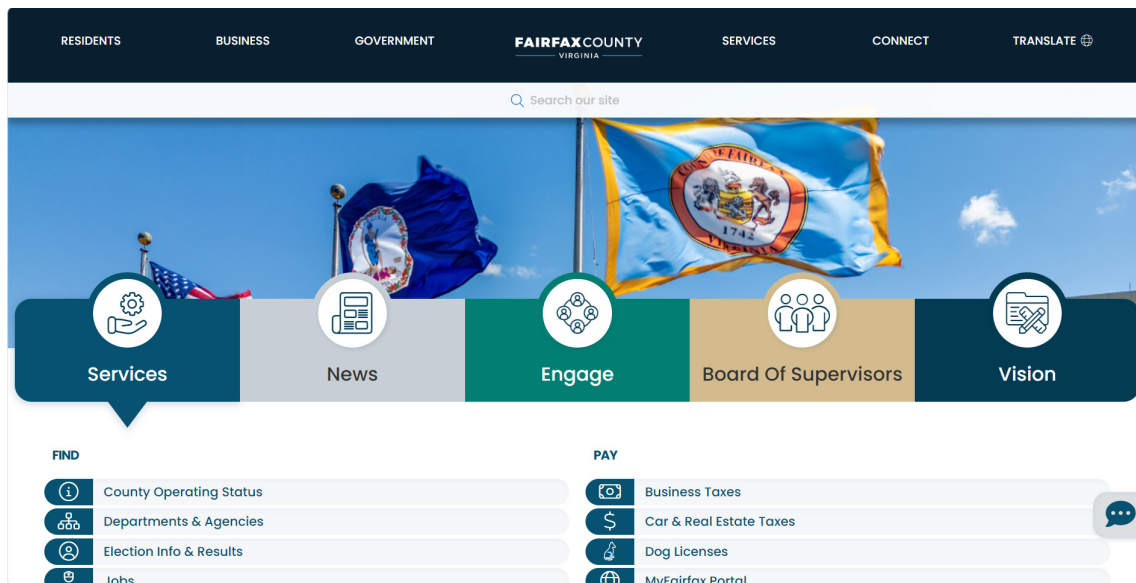
has streamlined the interaction between constituents and the government and provides the necessary tools for collaboration and participation with County government.

Approximately 55 County agencies have a presence on the site. The responsive design promotes a “mobile first” approach and renders the website seamless on all mobile devices bringing the County government closer to the public - available from anywhere at any time. The County website is also translated using machine translation powered by Google. The website experience has expanded significantly with improved and new interactive features and online applications including the “Fairfax Virtual Assistant” – an AI powered bi-lingual (Spanish) chatbot, to enable citizen interaction with government on various topics. Department of Information Technology and Office of Public Affairs work together with agencies to determine the most asked questions to inform content added to the Virtual Assistant. “Live Chat” functionality has been integrated with the bi-lingual virtual assistant and the website. Our customer service teams can now interact with our residents live through our Fairfax Virtual Assistant during business hours to answer our residents’ questions. The Live Chat functionality has the added feature of sending emails when representatives are not online.

To create a data-driven environment and support the ongoing strategy of transparency, interactive visual data and dashboards were added to enhance the web experience and share relevant information. Through data visualizations the chance of increasing audience engagement and presenting information in an understandable and digestible format is much higher.

The Fairfax County website provides secure and expedient access to hundreds of key online services for its constituents to pay, register or apply for services like tax payments, real estate information, permits, housing, jobs, basic needs, park classes etc., The convenience of conducting business online has many benefits including improved service through greater flexibility, faster delivery, cost optimization, and time savings for the public.

The NewsCenter (<https://www.fairfaxcounty.gov/news/>) on the County’s website is the central location to share County and community information. It is a comprehensive site, that consolidates all the way residents and employees can stay connected



Fairfax County Website

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with the County, including news articles, social media hub, podcasts, and emergency alerts.

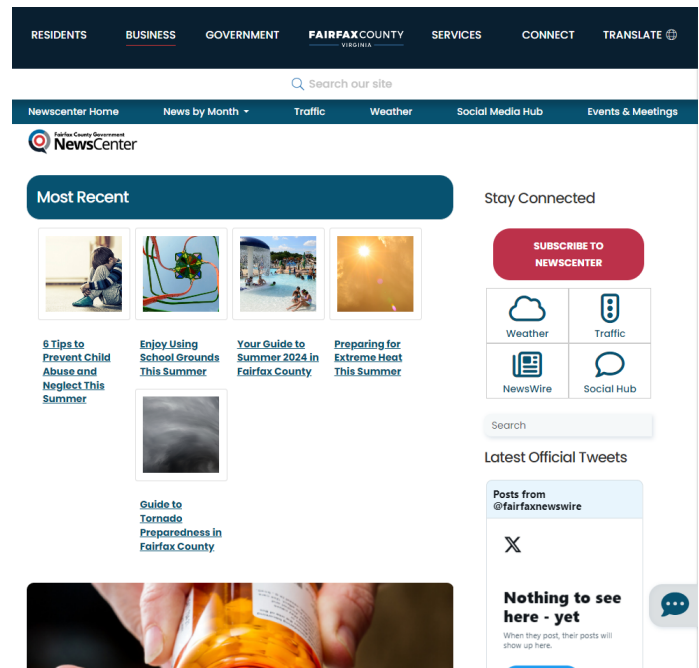
For website accessibility, website pages are tested for compliance with Section 508 of the Rehabilitation Act of 1973 (<https://www.section508.gov/manage/laws-and-policies>) and the Americans with Disabilities Act (ADA) by passing through the County's automated compliance checking tool.

The E-Government program will keep focus on continuous innovation and implement projects that will provide services and programs using new technologies such as cloud-native application development and integration, containerization, and shared services. The County will continue to invest in integrating Artificial Intelligence concepts to provide more efficient services, leveraging AI chatbot to engage with the public in additional languages, integrate with home assistants and working towards User-based Experience (Personalization).

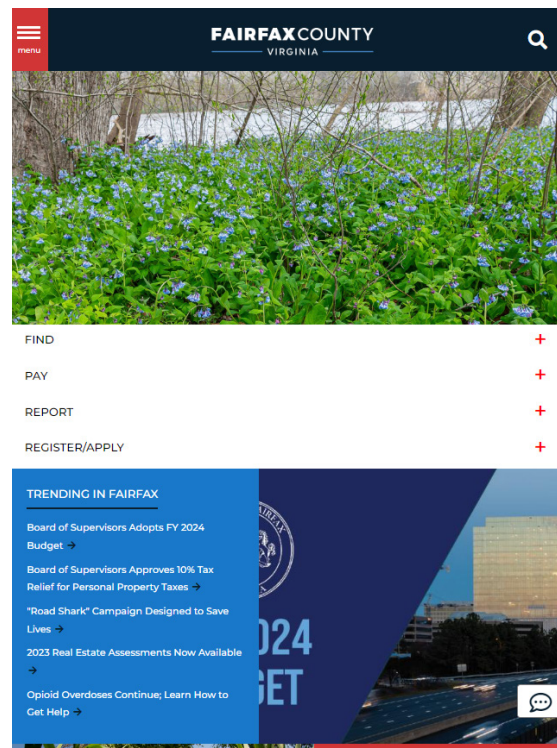
MOBILE

Acknowledging the widespread growth of mobile technology, the County website took a "mobile first" approach using responsive design, rendering the website seamlessly on all mobile devices bringing the County government closer to the public - available from anywhere at any time. Providing mobile accessibility allows residents to access the County at their convenience and reaches a wider user community with the ability to access services and information easily from any location.

Supporting the County's strategic vision and striving to create a citizen-centric approach that goes beyond the website, Fairfax County pioneered the availability of governmental services on mobile devices. In enhancing the County's long-standing goal that our community should be able to access their government 24/7 without walls, doors or clocks, Fairfax County placed government in the palm of their hands with the introduction of efficient and cost-effective mobile apps and services.



Fairfax County NewsCenter Tablet View



Fairfax County Services Phone view

The public can download the official Fairfax County application on their smartphones and tablets for emergency information, news headlines, one-touch calling through a contact directory, GPS maps, social media links, transportation resources and more at <https://www.fairfaxcounty.gov/topics/mobile>. The Fairfax County Mobile App has been downloaded over 5,165 times this past fiscal year.

SOCIAL MEDIA

Social media in Fairfax County has been a significant avenue in engaging its residents on platforms people use daily. News articles and information published on the website are integrated into Facebook, X.com (formerly known as Twitter), Nextdoor, Instagram, Threads, and Google News. The County currently has 62 official Facebook accounts, including two new accounts in Korean to support multi-language engagement, and an additional 10 Facebook pages for each Board of Supervisors which reached over 59 million people in FY 2023. Across the County's 20 X.com feeds, total X.com impressions for FY 2023 were 48,312,273. Continued adoption of our award-winning presence on Nextdoor in Fairfax is strong with 390,360 verified residents using the platform. The use of these tools is critical to engage in two-way communication with the community. A centralized social media content management system is in place, along with a comprehensive social media policy.

The social media management system's user interface takes the form of a dashboard, and supports integration of various social networks like Facebook, X.com (formerly known as Twitter), YouTube, etc. This system has helped build an engaging presence on social media with the ability to manage all our social networks and schedule messages for future publishing. Additionally, the real time analytics provided by this tool gives an in-depth view of how well the County's social media efforts are being received by the public with the ability to visualize the metrics in one easy place. The tool also helps monitor social media conversations that matter to the County, identify its influences, and observe emerging trends.

In coming fiscal years, the use of social media is expected to continue and grow. The E-Gov plan will further integrate social media into operational aspects of agency lines of business to ensure cross-platform sharing as needed. Social media tools will continue to evolve as leading E-Gov tools of choice in the years to come.



AUDIO AND VIDEO

Fairfax County produces various podcasts, giving our public the opportunity to listen to county news and information while they are on the go (<https://www.fairfaxcounty.gov/podcasts>). Podcasts give the opportunity to connect with county leaders, including our County Executive as a host to conversations, and are offered in additional languages such as Spanish regarding important topics to the community.

The use of videos has continued to expand beyond the County's existing cable TV channel. Use of recorded video testimony via YouTube for public hearings during COVID-19 is just one example of increased video use as we learn to work and communicate from a distance.

The County also uses platforms such as the emergency alert system (<https://www.fairfaxcounty.gov/alerts>) where residents can sign up to receive emergency alerts by both text and e-mail.

The E-Gov program will continue to affirm the vision and goals described in the Countywide Strategic Plan, with enhancements to services and a focus on improving online service delivery with a coordinated process for implementation. Efforts on re-architecting information, modifying layout and presentation of content on the County website will continue to be of prominence. Emphasis will be placed on providing information based on topics key to the public, based on metrics and usage patterns of the website.

3.2 GEOGRAPHIC INFORMATION SYSTEMS

Geographic Information Systems (GIS) is a strategic foundational technology, integrated with numerous County applications and business processes. GIS remains an essential component of County operations and is heavily used by a wide range of County agencies for a variety of purposes. The GIS Division maintains an enterprise-wide GIS system with a range of technologies, related products and data that provide the foundation for ongoing integration of GIS into County operations as well as enabling the agencies to maximize the use of analytical GIS in their lines of business.

Web-based GIS applications continue to be central to communicating locational based information to staff and residents. Map-centric applications continued to be created by County staff for operations and the public in FY 2024. Many of these are featured in the entries for the annual GIS Excellence Exhibition. [GIS Excellence Gallery 2023 \(arcgis.com\)](https://arcgis.com)

In FY 2024, the county saw a large expansion and heightened utilization of the internal Enterprise Portal as well as the Police and Fire and Rescue internal portals. These platforms have become hubs for internal applications that support many different groups in day-to-day operations. The modernization of these platforms was completed in the past year.

The public Interactive Map Gallery is the hub for all online maps on the County web site though each appear embedded on the relevant business pages as well. The Interactive Map Gallery alone hosts over eighty applications that provide a variety of informational and interactive services. Cumulatively these applications had over 2.9 million views in FY 2024.

Most Interactive Map Gallery ([Interactive Map Gallery | GIS and Mapping Services \(fairfaxcounty.gov\)](https://www.fairfaxcounty.gov/gis)) applications are focused and thematic, but the public also has access to a general GIS viewer and reporting application. The JADE was originally developed in FY 2020 as a public facing light GIS that allows residents to work with the GIS layers independent of thematic



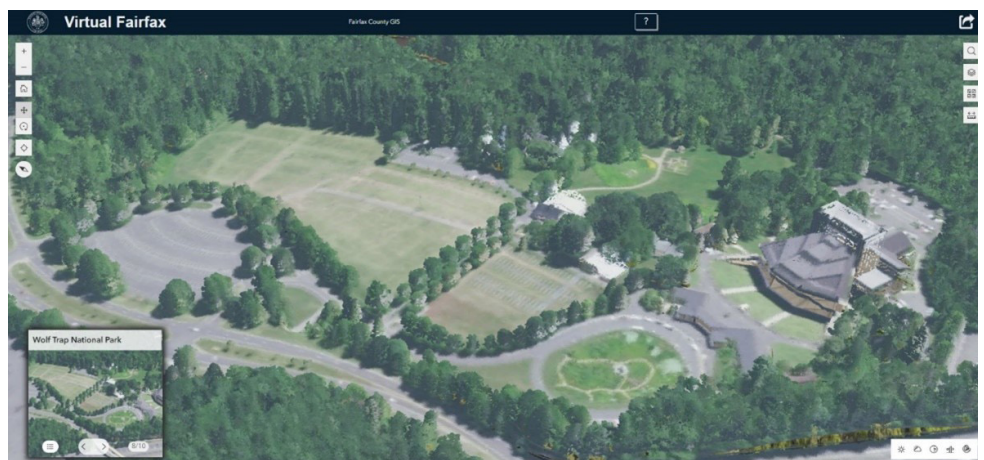
3D viewshed analysis Reston Town Centers

applications. The internal facing Geographic Exploration and Mapping (GEM), a sister application, contains largely the same information, with both applications providing residents and staff easy access to GIS information that staff will use in assessments and reviews. Online training videos support the public in learning how to use the JADE application and the use of both applications fill an important open government niche. In FY 2024, the GEM and JADE applications will receive updates for further improvements.

The availability of key County data through the GIS provides a range of benefits to constituents and County staff. Digital aerial photography is widely used in many GIS applications, providing the ability to do remote reconnaissance or to view past conditions. Parcel and zoning data are key datasets and are regularly maintained by the GIS Division. All parcel map changes are posted daily, providing web users of the Digital Map Viewer (DMV) with the latest versions of the maps. On average, over 13,000 DMV maps are viewed or downloaded per month.

Surface information is crucial to many environmental regulatory and stewardship functions undertaken by the County. The GIS Division leads the region in these areas, with exploitation of **LiDAR** and Land Cover Analysis. In 2015, for the first time, the County obtained **LiDAR** (Light Detection and Ranging) data for the entire County. A second **LiDAR** capture was performed again in 2018 and another flight was conducted in late 2022 (2022 data will be delivered in 2024).

Acquired in partnership with the US Geological Survey, this newest collection is at 8 points per meter totaling forty-six billion data points and over 1 TB of data. The resulting detail above ground and the ground level provides high value capabilities while the year-to-year comparisons now possible give unprecedented insight into how conditions change on distressed streams and other areas.



Colorized LiDAR point cloud at Wolf Trap

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For instance, soil removal volumes can be computed on specific watersheds to understand the scale of change across time. The 2022 LiDAR acquisition will update the analytical comparisons made of stream conditions over time to determine the extent of furtherance of bank subsidence and other hydrological processes. This information will subsequently inform the stream restoration program as well as others.

Oblique imagery and its related software constitute one of the County's core GIS data sets and technology. Originally flown for the first time in 2003, it serves as a key reconnaissance tool for multiple County agencies. Oblique imagery is integrated into CAD/911 operations, Department of Tax Administration assessment processes, the Geographic Exploration & Mapping (GEM) application, the public facing JADE application and serves as the source data used to derive the 3-D building. The County now flies oblique and ortho-imagery annually under GIS Division management. The newest oblique imagery was flown in late 2023 and will be received in the summer of 2024; the next acquisition is scheduled for winter 2024. This year the county will also acquire additional aerial imagery that will be taken several times across the year. These datasets will be available almost immediately upon capture to provide timelier perspectives.

Planimetric data is another foundational data set for almost all County GIS applications. Planimetric data is information derived from aerial imagery that model natural and man-made visible features. Accurate planimetric data depends on high resolution and high accuracy ortho-imagery which the county now acquires yearly. After conducting a thorough needs analysis in 2023, the County will pursue a planimetric update schedule to meet the business needs that were identified. In 2024, the County will commence an annual update cycle which began in winter 2024.

Addresses are essential to almost all County operations. The GIS Division collaborated with other County agencies to bring the Master Address Repository (MAR) online in 2004 and collaborated again when it was refreshed in FY 2023. The MAR is the



Orthophotographic image of new housing development.

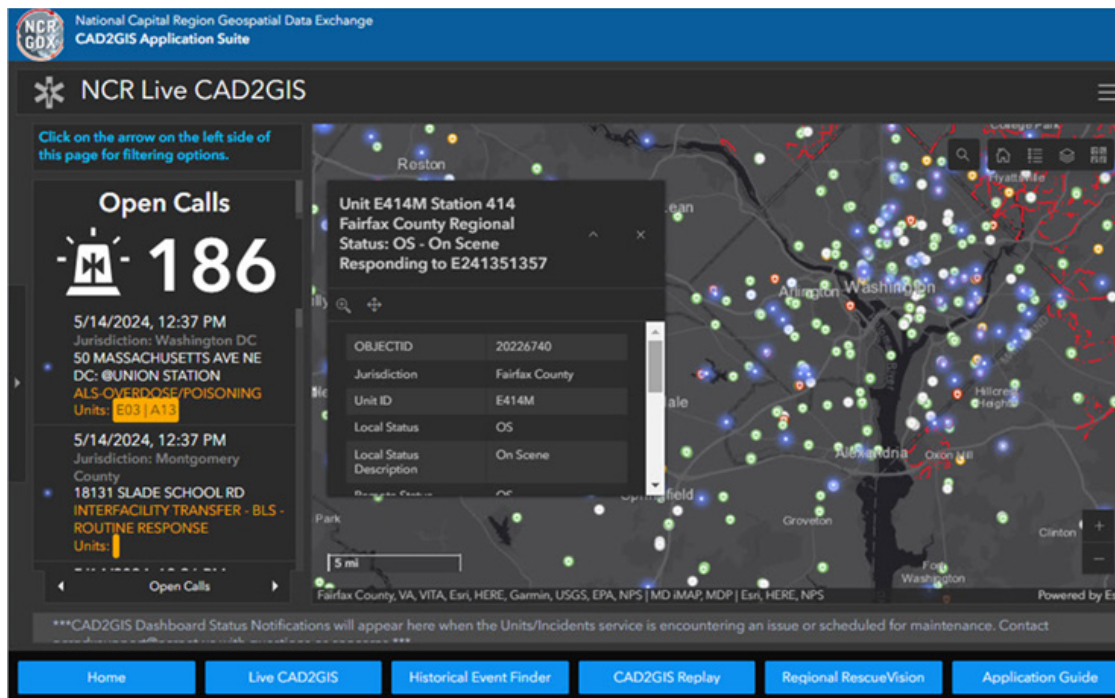


Oblique image of new housing development.

authoritative source of parcel (situs) addresses in the County and since 2004 the office has maintained all County address data in the MAR system. The Master Address Repository project has been invaluable for the CAD/911 system as well as other major County systems including the Planning and Land Use Systems (PLUS), tax administration systems and is essential for effective operation of the CAD/911 system. Integration with the MAR is a requirement of new and refreshed systems where address is used as part of the record. The new modernized MAR now contains over 375,000 unique authenticated addresses and has a new public interface for external access.

Working towards improved government interoperability is a significant and ongoing strategic activity for the GIS Division, both within Northern Virginia and regionally through the Washington Metropolitan Council of Governments (MWCOC). Interoperability across the National Capital Region (NCR) and with the Federal Government for emergency response purposes is crucial. Fairfax County is a member of the COG GIS Executive Committee and has guided the development and implementation of the regionally funded National Capital Region Geospatial Data Exchange (NCR GDX) through operational Program Management and Direction. The program began in the spring of 2012 and has transformed across time into a hub for regional public safety GIS Information. Users of the system can exchange contextual, or event related geographic information between emergency operations centers, command posts, or fusion centers. Additionally, the NCR GDX program conducts its own “community” drills to ensure the readiness of the operators and familiarity with the tools to enable the GIS community across the NCR in collaboration with federal agencies to support a regional emergency response.

The CAD2GIS project was established as part of the NCR GDX program. CAD2GIS uses geospatial data feeds from live CAD2CAD data (9-1-1 call and unit information). This data offers a near real time geospatial view of Fire and Rescue unit and incident locations to provide situational awareness at a regional level. The geospatial data can be consumed and integrated into existing applications by participating jurisdictions within in the NCR to support both local and regional emergency preparedness and response operations. Figure above shows the regional dashboard for CAD2GIS (NCRGDX Regional Dashboard).



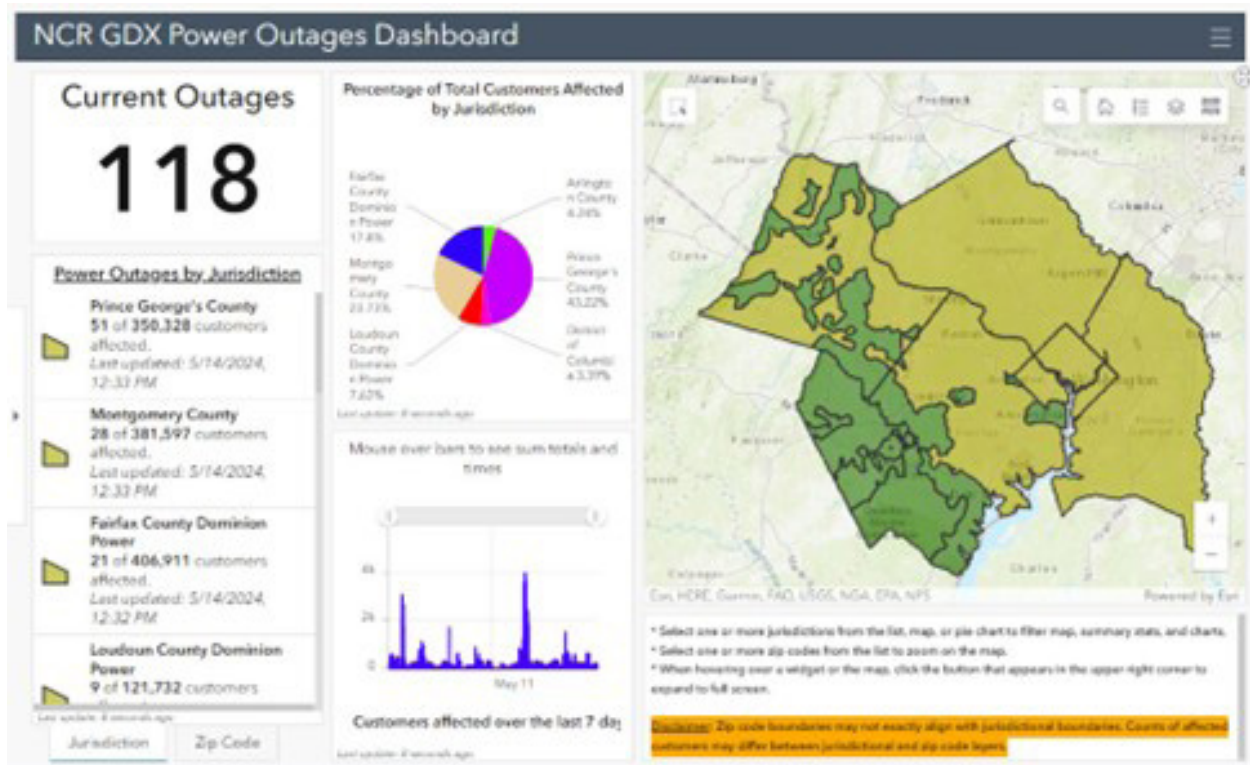
National Capital Region Geospatial Data Exchange – Live Regional Emergency Vehicle and Incident Locations

As the NCRGDx program continues, County staff who administer the program continue to look for ways to solve or assist with regional GIS initiatives and efforts. The program already provides inter-governmental tools for regional initiatives such as the NG9-1-1 Collaboration Tool which allows for coordinated maintenance of Public Safety Answering Points (PSAP) boundary layers across the region to support NG9-1-1 implementations and to ensure 911 calls are routed to the appropriate PSAP. This system assures the update efforts are uniform and coordinated across the region and within the Commonwealth. Current initiatives seek to create responder level tracking services for Fire and Rescue as well as a law enforcement incident situational awareness tool.

Interoperability is crucial in Northern Virginia as emergency response personnel regularly cross jurisdictional boundaries. Access to accurate street centerline data is particularly important to the Fire and Rescue personnel who may have to cross jurisdictional boundary lines when responding to an incident. The GIS Division maintains Fairfax County's street centerline data used in the CAD/911 system and provides the data to the Commonwealth of Virginia which aggregates Fairfax County's data into a state-wide centerline file. The Northern Virginia Regional Routable Centerline (NVRRL) project, led by the GIS Division, has been an important and ongoing project enabling centerline data sharing for the CAD/911 system. The project established a common street centerline data model to support vehicular routing and enables participating jurisdictions to share current street centerline data to support vehicular routing, and enables member jurisdictions (Loudoun, Prince William and Arlington counties and the cities of Alexandria, Falls Church, and Fairfax) to share routable centerline data across Northern Virginia and the Commonwealth. GIS support for the CAD/911 system is a core GIS office responsibility, involving data maintenance requirements which continue to be a significant effort. With the transition to Next Generation 9-1-1, regional data plays an even more critical role.

GIS technology continues to be an important asset in emergency management. The GIS Division has a team of analysts trained to respond and assist the Department of Emergency Management and Security during an emergency. The team has developed a viewer which enables users in the Emergency Operations Center (EOC) to access various datasets including the regional GDX emergency incident layers, the CAD2GIS data feeds, and other supporting data to support both local and regional response efforts.

GIS technology enables its users to perform advanced data analysis to inform emergency managers and responders during evolving and dynamic response efforts. For instance, the number of people estimated to be in a particular area, number of homes impacted by a power outage or a boil water order, homes that will be impacted by a sewage pumping station issue, etc. GIS is a key component of situational awareness in the support of emergency operations and activations during which the GIS Division works closely with the Situation Unit to keep the emergency operations staff informed from a common operating picture.



National Capital Region Geospatial Data Exchange – Regional Power Outage Viewer

The breadth of GIS utilization across the County, and the extent of its integration into the overall IT architecture are reflected in the award-winning plans and efforts of the preceding years. These awards recognize GIS's achievement in fostering and expanding the use of GIS applications to improve County operations:

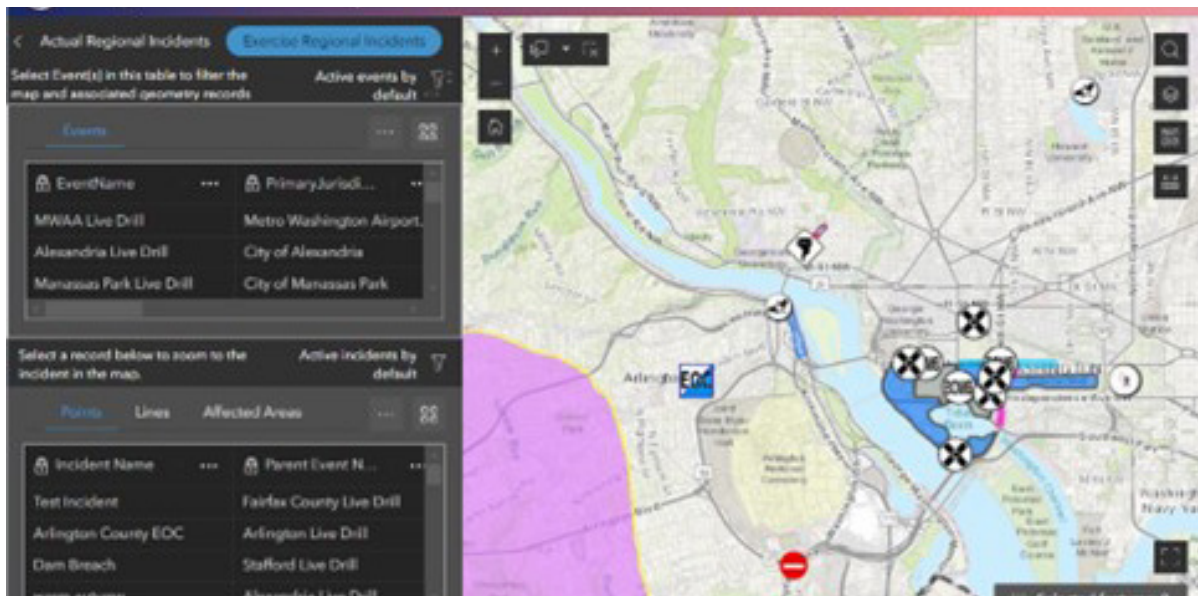
- ✓ In CY 2022, the Environmental Systems Research Institute (ESRI) recognized Fairfax County for excellence in its Enterprise Approach to GIS. This award recognized the way in which Fairfax County has achieved and maintained organizational success through its Enterprise GIS policies and approaches.

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Evergreen tree detection analysis using advanced image analysis for forest pest control program

- ✓ In CY 2020, Fairfax County received a Special Achievement in GIS Award from Environmental Systems Research Institute (ESRI). This award was given in recognition of Fairfax County's broad based, innovative and enterprise approach to GIS that has resulted in significant benefits to County agencies and residents.
- ✓ In CY 2018 the National Association of Counties granted Fairfax County its 2018 Achievement award for its program "Customizing Data for Health and Human Services Planning", which was GIS-based and helped drive zoning and development decisions.



National Capital Region Geospatial Data Exchange – Regional Event Viewer

- ✓ In CY 2015, Fairfax County was ranked #1 for jurisdictions with population over 500,000 in the Digital Counties Survey of the “Most Innovative, Pioneering Counties”. The award specifically referenced a GIS application developed by the Department of Neighborhood and Community Services. That application was also a winner of one of the County's GIS excellence awards the year before.
- ✓ In FY 2014, Fairfax County was awarded a Special Achievement in GIS award by Environmental Systems Research Institute (ESRI) for its contributions to ESRI's national community mapping service. Now a highly detailed base-map is available for all users of ESRI's tools. Fairfax County continues to support this effort.
- ✓ In FY 2011, Fairfax County GIS, as part of the regional team carrying out the Regional Routable Centerline project, was awarded a Special Achievement in GIS award by ESRI. The award recognizes organizations that use GIS to “improve our world – and set new precedents throughout the GIS community.”
- ✓ The National Association of Counties recognized Fairfax County for its use of GIS in the reapportionment process.

Fairfax County is a member of the Northern Virginia GIS managers group, an informal group that regularly meets to coordinate activities, serves on the MWCOC GIS Committee, and works closely with the State's GIS agency (Virginia Geographic Information Network), which is part of Virginia Integrated Services Program. Additionally, each year, GIS hosts “GIS Day” and the GIS Excellence Awards which promotes the use of GIS and development of new GIS applications through County wide competition and awards.

3.3 HEALTH AND HUMAN SERVICES TECHNOLOGY SOLUTIONS

The Department of Information Technology's Health and Human Services program supports six agencies in the Health and Human Services cluster, including:

- Department of Family Services
- Health Department
- Community Services Board
- Neighborhood and Community Services
- Housing and Community Development, and
- Juvenile and Domestic Relations District Court.



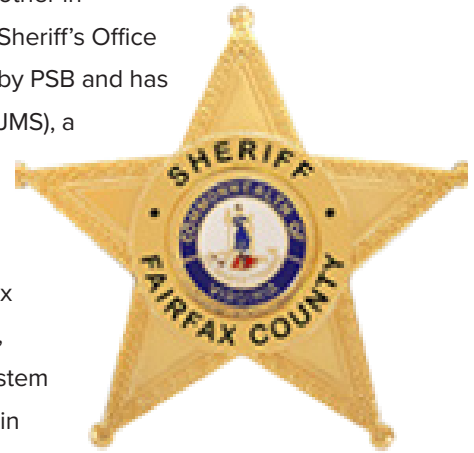
The DIT HHS program works with County agencies to provide technical guidance and management of agency technology solutions. The DIT HHS program team supports agency initiatives to implement new solutions improving the productivity of agency operations. The DIT HHS team maintains and modernizes legacy applications to develop and deploy solutions that improve productivity and access to analytical data. HHS agencies are moving forward with investments in Electronic Health Records solutions to enhance capabilities in case management and analytics. HHS agencies are adopting content management solutions to support document management priorities in their agencies. Another area of investment is in Learning Management solutions that support the workforce optimization objectives of the agency.

3.4 PUBLIC SAFETY SYSTEM AND SERVICES

The Public Safety Division within DIT is comprised of two distinct branches: Public Safety Applications Branch (PSB) and the Radio/Wireless Services Branch (RSC). The Public Safety Division has direct responsibility for providing applications and communications support to the Fairfax County Fire and Rescue and Police Departments, the Department of Emergency Management and Security, the Department of Public Safety Communications, and the Fairfax County Sheriff's Office. In addition, the PSB has recently began providing support to the Department of Vehicle Services and the RSC also supports the Fairfax City Fire and Rescue Department as well as the Police Departments for Fairfax City, and the Herndon and Vienna Police Departments, George Mason University Police Department, and their respective dispatch centers for radio communications.

In 2023, it was determined that the RSC would be transitioned under the umbrella of Public Safety from the Technology Infrastructure Division since the program's primary customers are the Public Safety agencies.

The PSB currently has 33 discrete applications it currently provides support for and another in development. Additionally, the PSB team is supporting the transition of several of the Sheriff's Office applications to new platforms. The Sheriff's Inmate Management System, developed by PSB and has been in use for over 15 years is being transitioned to a new Jail Management System (JMS), a COTS product cloud-based solution that will have additional functionality utilizing the newest technologies. The new JMS will meet the demands of managing a population of approximately 1,200 inmates housed within the Fairfax County Adult Detention Center by supporting booking receiving and release, classifications, complex sentencing calculations, incident reporting, inmate records, medical, behavioral health, finance, property, programs, professional services, transportation, and visiting. The system will provide accurate reporting and statistics required for the Sheriff's Office to remain in compliance with local, Virginia State Code, Supreme Court of Virginia Statutes, and Federal and State data and reporting mandates.



The system will interface with electronic medical records, inmate accounting, commissary, inmate communications, mugshots, scanning, Police Department (PD) Records Management System (RMS), and the Sheriff's Records Management System (RMS) for incident-based reporting (IBRs), as well as multiple state and local systems such as Active Directory, Local Inmate Data System (LIDS), Northern Virginia Regional Information System (NOVARIS), Virginia Criminal Information Network/ National Crime Information Center (VCIN/NCIC), and Victim Information and Notification Everyday (VINE). The new system will provide the opportunity to automate remaining manual tasks, provide robust reporting and statistics, automate notifications and alerts, provide a mobile solution, and interface with the Fairfax County Courts (Circuit Court & Records, General District Court, and Juvenile & Domestic Relations District Court) and the Magistrate's Office.

As this project is in transition, the Medical Section of the Adult Detention Center (ADC) has selected a new Electronic Health Record System to replace the existing solution. Both transitions will have a significant impact on the way the Sheriff's Office manages the operations of the ADC and the people that are under the care of the Sheriff's Office while in custody. Other such applications that help to support improved outcomes of people housed in the ADC, and that have interactions with law enforcement or are involved with the criminal justice system under the Diversion First umbrella include: Diversion First Data

Warehouse, Crisis Intervention Team dashboard with Power BI reports, Merrifield Crisis Response Center Data Sheet, Co-Responder Model for Emergency Crisis Services, National Institute on Drug Abuse (NIDA) Assist under the Jail Based Behavioral Services program, Community Response Team Dashboard with Power BI reports, and the Court Services Pre-Trial application that assists in a number of program efficiencies for the court system.

The Sheriff's Office is required by Virginia Code 8.01-293 to execute civil processes within its jurisdiction, and to report statistics as required by the Virginia Compensation Board. The Office of the Sheriff, in collaboration with the three Fairfax County Courts, and the Department of Information Technology is implementing an Advanced Civil Enforcement System (ACES) to automate existing civil enforcement business processes and replace the legacy systems. The ACES solution provides a web and mobile solution, enhanced security, reporting, statistics, and will also provide interfaces between the Sheriff's Office, the Courts, and other County agencies. The ACES Project Sheriff Civil Enforcement System has transitioned to a new, internally built Civil Enforcement System called NuACES supporting critical needs of the Sheriff's Office Civil Enforcement Branch. This includes the civil enforcement processes such as real-time tracking of service information, a single bi-directional interface with the General District Court's Case Management System (CMS), an interface with the County's Geographical Information Systems (GIS) for geocoding and geofencing to electronically track service documents, and a mobile solution utilizing existing infrastructure. The project will continue with development to provide secure public and internal web access, bi-directional interfaces between ACES and the three Courts' case management and imaging systems, and interfaces with other County agencies.

The Fairfax County Sheriff's Office has also developed a program called Diversion First. Diversion First is a cross-system initiative that offers alternatives to arrest and incarceration for people with mental illness, substance use disorders, and/or developmental disabilities who encounter the criminal justice system for low-level offenses. The goal is to intervene whenever possible to provide assessment, treatment, or needed support, to prevent repeated encounters with the criminal justice system and promote a safer community with enhanced public safety. Diversion First is a collaborative effort involving health and human services, public safety, and the courts. This project supports implementation of a technology solution to standardize and automate data capture, analysis, and reporting, to ensure accuracy of the data, and significantly improve turn-around times for reporting and outcomes analysis. This will ultimately result in enhanced public safety, a healthier community, and a more cost effective and efficient use of public funding.

The Diversion First project team has finalized and documented data elements from the various data sources to be used in building the Diversion First Data Warehouse and Power BI as its dashboard reporting solution. Data is captured from the Sheriff's Information Management System (SIMS), the Court's Supervised Release Program (SRP), the Merrifield Crisis Response Center Data Sheet (MCRCDs) and Community Services Board's electronic health record (Credible). A referral application, dashboard, and business intelligence (BI) tool were developed for the Community Response Team (CRT), and tools have been enhanced as the CRT has evolved. In addition, a BI tool was also developed for Court Services, automating previously manual data processes for pre-trial and probation services; an automated process was developed to transmit results of the Brief Jail Mental Health Screening (BJMHS) from the Adult Detention Center to the CSB for further evaluation and service provision; and significant work has been completed to incorporate behavioral health call data from the Department of Public Safety Communications (DPSC). Of note in FY 2024, the application developed for the MCRCDs was expanded to include a module with a new application and a dashboard for the County's Co-Responder program.



The Fairfax County Police Department is also in the process of implementing a Real-Time Crime Center (RTCC) and will be used to solve crimes, enhance officer safety, provide visibility to emergency events, and better inform our department about ongoing criminal trends. RTCC's use software integration systems to combine technology and data sources used by staff at the RTCC. A growing list of video, license plate reader, covert and overt camera systems, as well as body worn and in car video, create multiple interfaces that must be navigated during an event. A software integration system would bring all those interfaces, including data sources, into a single viewing platform that will allow for quicker access when dealing with in-progress events.

Year 1 Deliverables

1. RTCC begins operations with equipment and staffing (Step 1)
2. RTCC operating system purchased and installed (Step 2)
3. Initiate camera and systems integrations (Step 3)

Year 2 Deliverables

1. Community and business engagement sessions for camera integration (Step 4)
2. Begin RMS basic integration/complete RMS integration (Step 5, Step 6)
3. Establish final protocols and evaluation of operating system (Step 7)

Timeline



The current Police Department Records Management System (iLEADS) is being replaced with a next-generation Records Management System (RMS). The new RMS will provide the Police Department with a commercial off-the-shelf web-based solution that will integrate with third party software and integrate closely with the current version of the Computer Aided Dispatch (CAD). The new system will fully utilize and support the present and future needs and business processes of the police department. The new RMS will incorporate legacy information from the existing Police Department data warehouse seamlessly with the ability to present, analyze, search, and collate data for custom reporting useful in crime analysis and staffing needs. This more modern system also assures improved accuracy, timeliness, reliability, and accessibility of information on events.

The existing 911 Emergency call handling system utilized by the Department of Public Safety Communications to take 911 emergency calls has reached end-of-life after seven years and the implementation of a new cloud-based call handling system will be completed in CY 2024. Three of the five locations have been upgraded to the new call platform with the remainder planned for completion by July 2024. The cloud-based solution provides multiple layers of geographic redundancy, simplifies maintenance at the local level due to the cloud architecture, and improves ease of integration with other cloud-based public

safety applications. Key new features include automatic two-way language translation (up to 170 languages) and transcription of voice and text call, ability to receive inbound video for emergent situations, improved mapping, and ability to display relevant public safety data (Virginia Department of Transportation - VDOT camera feeds, vertical location information for callers, floor plans, etc.). The cloud-based platform establishes the potential for greater regional interoperability using a shared platform.

Project efforts are underway to allow machine learning capabilities to support dealing with critical staffing shortages by performing triage of non-emergency calls using advanced software services (voice chat, text links to online web resources, etc.) This allows citizens to directly reach sources of information, if desired, without the need to speak to public safety telecommunicators. Other planned efforts include allowing near real-time transcription of radio transmissions for police and fire dispatchers to enhance officer safety and allow for keyword alerts such as officer down, mayday, etc. and additional integration of data sources to improve response times and to allow integration of 911 data with County Command Centers in real-time.



Fairfax County has managed a grant for a US Department of Homeland Security Urban Area Security Initiative (UASI) program since 2008 that provides for interoperability between Computer-Aided Dispatch systems from the Washington, DC Metropolitan Council of Governments (COG) jurisdictions, which currently includes 24 local governments, Washington, DC, the states of Maryland and Virginia, and agencies from the US Federal Government. There are currently eight actively participating jurisdictions with three more jurisdictions in the schedule for implementation that are actively being integrated. There are another three other jurisdictions in the planning process to join the CAD2CAD environment. The CAD2CAD solution allows member jurisdictions the

ability to dispatch Fire and Rescue units to mutual aid incidents without directly contacting the jurisdiction providing the available requested resource. Prior to the genesis of the CAD2CAD program, jurisdictions would have to physically call the neighboring 911 centers to request units to be dispatched to an incident, thus delaying the response of critical emergency resources. On average, the CAD2CAD solution reduces dispatch times by an average of 90 seconds, which on face does not appear to be much, but when coupled with other technological and communications enhancements, first responders are arriving on the scene of incidents much faster and safer, thus can mitigate emergencies in a much shorter time frame. The CAD2CAD program is currently in the process of testing the new Next Generation Exchange (NGX) interface with Fairfax County, Washington, D.C., and Anne Arundel County, MD. Upon completion of testing, all current member jurisdictions utilizing CAD2CAD will transition to utilizing the NGX interface along with all future agencies. There are also planning efforts to incorporate law enforcement agencies into CAD2CAD service.

The RSC has responsibility for managing the County's Land Mobile Radio (LMR) system that provides service for all County public safety agencies to include the City of Fairfax, the Towns of Herndon and Vienna, as well as George Mason University. The Public

Safety LMR system is a highly resilient and robust P25 Digital Simulcast System that provides coverage for the 406 square miles that make up Fairfax County, Fairfax City, and the Towns of Herndon and Vienna.

Identification, location, and mitigation efforts of radio interference that negatively impacts the radio system through real-time monitoring is a responsibility of the RSC Engineering team as well as Distributed Antenna System plans review, site walks, commissioning, and assessments for buildings that wish to retransmit public safety spectrum that will assist first responder communications in times of emergencies. Annual coverage testing of the County, coverage map creation, and coverage analysis is also performed by RSC personnel.

In addition to maintaining and operating the Public Safety LMR system, the RSC also provides frequency management and coordination of County licensed radio spectrum from the Federal Communications Commission (FCC) and works with regional, state, federal (civilian and DoD) partner jurisdictions and agencies to facilitate and maintain communications interoperability within the Washington, DC National Capital Region (NCR).

RSC staff is also responsible for the design and installation of radio and data communications equipment, In-Car-Video (ICV) solutions, and other electronic peripherals in public safety vehicles. Whether the vehicle is marked and readily identifiable, unmarked, or covert, RSC technicians perform installation and repair services that comply with industry standards and in such a manner that allows public safety personnel to perform their duties while having the necessary equipment easily and safely within reach. The RSC is on pace to buildout 130 vehicles in FY 2024 ranging from sedans to pickup trucks, sport utility, and specialty vehicles. It is estimated that in FY 2025, the RSC will build out 259 vehicles.

3.5 TAX SYSTEMS MODERNIZATION

The County's tax system applications play a vital role in revenue collection, financial management, and providing essential services to its residents. Leveraging advanced technology and innovative approaches, Fairfax County has developed a comprehensive suite of tax system applications to streamline processes, enhance transparency, and ensure compliance with tax regulations. Fairfax County Tax System Applications are broken down into several areas:

Property Tax Management Systems: This includes the COTS solution, Tyler Technologies, Enterprise Assessment and Tax System (Real Estate), and the in-house built Tax and Business Solution (TABS). These systems are the cornerstone of Fairfax County's tax infrastructure. They facilitate the assessment, billing, and collection of property taxes, which constitute a significant portion of the county's revenue. The inhouse developed solution TABS manages multiple tax types, including:

- Personal Property
- Business Personal Property
- Business, Professional and Occupational License (BPOL)
- Short Term Rental
- Transient Occupancy Tax



Web and Payment solutions: To facilitate seamless transactions, Fairfax County provides an online payment gateway that supports various tax payments, including property taxes, business taxes, and vehicle taxes. These solutions are offered in two forms- Stand Alone and via MyFairfax Portal. Stand Alone allows for one-time transactions for quick and easy payments. The

MyFairfax Portal allows taxpayers to create an account and link to the Tax Application. Once linked taxpayers can track and maintain their personal tax history with Fairfax County for both Real Estate and Personal Property tax. This secure and user-friendly platform allows taxpayers to make payments using different methods, such as credit/debit cards or electronic funds transfer, thereby promoting financial inclusivity and ease of payment. Additionally, vehicle tax registrations and taxation are streamlined through Fairfax County's dedicated systems. This platform enables residents to register their vehicles with the county for tax purposes, update and change registrations. By digitizing these processes, the county enhances convenience for taxpayers while ensuring accurate and timely collection of vehicle-related taxes.

Fairfax County's Business, Professional and Occupational License Portal caters to the needs of businesses operating within the county. From business license renewals to tax filings, this portal offers a centralized platform for business owners to fulfill their BPOL obligations efficiently. It simplifies the process of registering new businesses, updating information, and calculating taxes, thereby fostering a conducive environment for economic growth.

Tax Relief: In addition to its tax system applications, Fairfax County emphasizes taxpayer assistance. The in-house developed Tax Relief solution allows the Department of Tax Administration to assist eligible residents to apply, track and disburse tax relief and rental grant relief.

Recently, initiatives have been underway to modernize and expand the offerings for taxpayers. The recent implementation of the new TABS solution has allowed Fairfax County to meet the needs and goals of the County and its constituents. This includes better, faster and more efficient payment methodologies, both online and in person, integration with new reporting systems for better reporting and tracking and expanding offerings for business to file and pay online. Additional projects are underway to set up kiosks around the county. This will allow for after-hours and weekend payment collection in various tender types without having to come to the main office. Within the operational area, new customer relation management systems are being developed to better assist residents in a more efficient and effective way. The goal of the tax systems is to provide a more diverse base of systems and solutions to create a better customer experience and make the collection and distribution of taxes more efficient and effective, while keeping equity and accessibility a priority.

3.6 CYBERSECURITY PROGRAM

The Information Security Office develops and enforces the cybersecurity and data security policies and standards necessary to protect the County's information and technology infrastructure. The County's cybersecurity program fuses best practice security principles, supported by policies, plans, and procedures, the implementation of modern technologies, and leveraging private sector service providers and partner services, to mitigate risk associated with the evolving cybersecurity threats across the industry landscape, enhance resilience, and foster trust in the County's technology infrastructure and services.

The objectives of the information security program are to ensure the confidentiality, integrity, and availability of data and systems. Additionally, it aims to ensure compliance with legal mandates such as the Health Insurance Portability and Accountability Act (HIPAA), the Payment Card Industry Data Security Standard (PCI-DSS), and the Criminal Justice Information Services (CJIS) Security Policy, as well as ensure the preservation and privacy of all sensitive information and protection of critical infrastructure essential to providing citizen services, public safety, and continuity of operations.

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The information security program utilizes a multi-faceted approach to meet these objectives, an approach that includes the following defense-in-depth program areas:

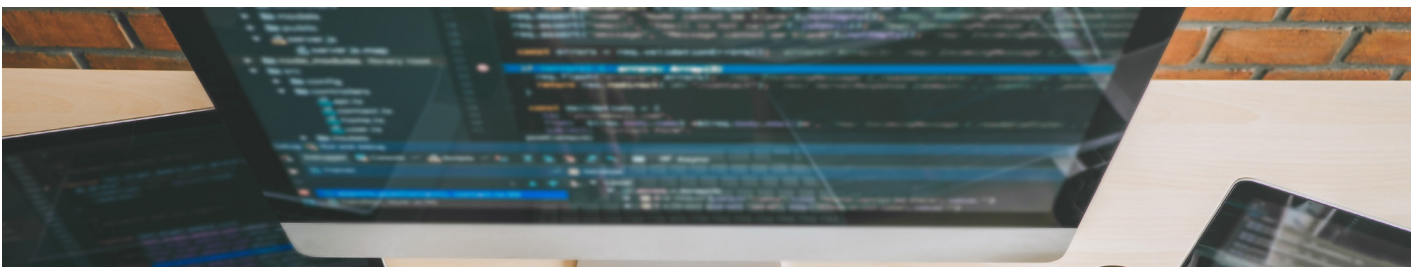
1. Risk Assessment and Threat Analysis
2. Policy and Standard Development and Enforcement
3. Vendor and Service Provider Management
4. Identity Management and Access Control
5. Data Protection and Loss Prevention
6. Network Security
7. Endpoint Security and Configuration Management
8. Incident Response and Contingency Planning
9. Training and Awareness
10. Continuous Monitoring and Threat Detection
11. Compliance and Regulatory Adherence



Image reference from NIST Cybersecurity Framework 2.0:
<https://nvlpubs.nist.gov/nistpubs/CSWP/NIST.CSWP.29.pdf>

Continued initiatives include enhancing resilience, business continuity, and incident preparedness as the County's architecture evolves into a hybrid multi-cloud infrastructure capable of delivering continuously secure application and service delivery. These focus areas will bring the County into greater alignment with both Federal and State cybersecurity regulations and initiatives and build upon the momentum established with growing legislation related to cybersecurity and information sharing and data privacy across the public sector.

Fairfax County's cybersecurity program has been nationally recognized by the National Association of Counties (NACo) and received the Virginia Governor's Technology Award in 2014 and the CSO50 Award for 2016. In addition, Michael Dent, the Chief Information Security Officer of Fairfax County, won the 2015 ISE North America Executive Award for the Public Sector for the development of a County-wide comprehensive IT security risk and privacy program; he was also awarded the Cyber Security Leader of the Year by StateScoop News organization in 2019. The Fairfax County Information Security Office staff regularly represent and lead the Northern Virginia region in joint cybersecurity initiatives and represent the County in Commonwealth initiatives such as the State's ELECT Election Security Committee and the Virginia Cybersecurity Planning and Incident Response committees.



3.7 ENTERPRISE RESOURCE PLANNING

FOCUS is Fairfax's SAP based enterprise resource planning (ERP) system shared by Fairfax County Government and Fairfax County Public Schools to conduct finance, budget, procurement, and human resources business functions. The FOCUS system was implemented in 2011/2012 to replace the county's legacy financial, procurement and human resources systems.

The FOCUS project was a multi-year, joint initiative to modernize the portfolio of legacy enterprise systems, that were on a variety of hardware and software architectures, with an integrated approach under a single application platform that has the flexibility to meet current and future requirements of both entities. The project provided an opportunity to transform and streamline administrative operations, enhance use of information for reporting and analysis, reduce agencies' 'shadow' systems and overlapping processes, and lower related costs. A governance body of senior officials of the County and School system stakeholder agencies developed the optimal strategy for the acquisition and implementation an integrated financial/ procurement/human resources solution to support agencies in the delivery of government and school services and activities, take advantage of best practices, provide the opportunity for multi-faceted data-driven decisions, significantly improve the efficiency and effectiveness of existing processes, enhance e-government initiatives and promote telework opportunities, and aid in the transformation and standardization of financial and human resource processes.



The FOCUS project fostered an environment of change and redesign to allow for more efficient and effective processes while seeking to mitigate the risk that antiquated and disjointed systems posed for system failure and inferior data. Automation and modernization empowered both employees and managers to execute processes more efficiently, and make the best strategic decisions based on the most timely and accurate information. This shifted the orientation of the system from that of a data repository to one of an information system solution. With the migration to a more standard, supportable database and development environment that incorporates workflow and Web technology, the project:

- ✓ Created a contemporary enterprise scale single solution platform that reduces total cost of system management and data center operations.
- ✓ Enabled a flexible environment where access to data and information is achievable, even from remote locations.
- ✓ Provided seamless integration and interoperability of the new system with other existing applications.
- ✓ Reduced the number of shadow systems currently used in the County and Schools that augment legacy system data and the associated reconciliation processes between systems.
- ✓ Aligned the reporting strategy with the County and School system's overall data management and data warehousing strategy to support increased intuitive reporting, better data definition, and analytics as well as data stewardship, integrity, and security. Improved the quality and accessibility of information for decision support and transparency.
- ✓ Facilitated modern and fully integrated best business practices that empowered agencies and employees to improve their productivity.
- ✓ Enhanced and improved functionality in back-office functional areas.
- ✓ Reduced redundant data entry, storage, and paper processing.

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- ✓ Facilitated employee/manager self-service and procurement self-service via a web-based interface.

The FOCUS system is supported by the DIT FOCUS DevOps team and the DMB FOCUS Business Support Group (FBSG). The FOCUS DevOps is a team of highly skilled software engineers providing mission critical support for the FOCUS enterprise system including custom development, infrastructure support, identity management, business intelligence/report, portal support, end user provisioning and change management. The FOCUS Business Support Group (FBSG) is a team of business analysts providing functional system support to our business process owners and user community by providing expertise in business process design, requirements gathering, system solution design, system configuration and administration, report/data warehousing, and user support. The FBSG works in concert with the DevOps team to provide comprehensive, end-to-end system support.

The following 10 FOCUS guiding principles are still in play today as DIT plans and executes continued improvements and modernization activities:

1. Team Fairfax
2. One business system
3. Processes that fit the software
4. Efficiencies through integration
5. Increase capacity to excel and provide maximum value
6. Eliminate silos
7. Seek input and ideas
8. Change is good
9. Supported and sustained training
10. Failure is not an option!

Along with providing regular production support to our business process owners and user community, the collective FOCUS support team's mission is to continue to provide process improvement and system enhancements while ensuring the technical infrastructure is kept up to date with the latest technologies. Since FOCUS went live, multiple projects have been completed to support this mission including annual stack upgrades, a major enhancement pack upgrade, a hardware/software upgrade, the implementation of Vendor Invoice Management, and a database upgrade to SAP HANA.

The future roadmap includes a user interface upgrade to SAP Fiori and eventually the move to SAP's newer applications such as S/4HANA, SuccessFactors, and Ariba.

Enhancing User Experience: FOCUS's UX Strategy

This entails an improvement in the overall experience with FOCUS by implementing a user centric UX strategy that focuses on simplicity, intuitiveness, and personalization. FOCUS UX initiatives are aimed at improving user engagement and ensuring that users can navigate the system seamlessly. By prioritizing simplicity, FOCUS team aims to reduce complexity and make it easier

for users to interact with the platform. Intuitiveness is another key aspect of the strategy, as we want users to be able to easily understand how to perform tasks without needing extensive training or support. Personalization is also important, as it allows users to tailor their experience based on their preferences and specific needs.

FOCUS UX initiatives include redesigning the interface to enhance usability and accessibility, introducing features such as role-based dashboards and personalized recommendations to provide users with relevant information in a more efficient manner. Additionally, the project has focused on responsive design, making sure that the platform works seamlessly across different devices.

Improving user engagement is crucial for the FOCUS team as it leads to higher productivity and satisfaction among its users. By implementing a user-centric UX strategy, FOCUS aims to create an intuitive and personalized experience that simplifies complex processes and enhances overall efficiency.

3.8 PLANNING AND LAND USE SYSTEM MODERNIZATION

The departments supporting Fairfax County's land planning and development processes initiated a major strategic initiative, Planning and Land Use System (PLUS), to improve the speed, consistency, and predictability of the development review processes, and improve access to data and reporting. This project replaced and consolidated numerous legacy land use systems supporting zoning and development plan review, building permit/license issuance, code enforcement inspection, and cashiering activities. These legacy systems lacked the native agility of modern technologies for a flexible enterprise platform for evolving business process and architecture requirements, lacked optimal security capacities, and had compatibility issues with emerging desktop, tablet and mobile wireless technologies.

The initiative supports County plans to advance economic development and competitiveness, enhance business processes, provide better customer service, and achieve increased reliability in plan review, approval, permitting, and inspections. This initiative also supports Fairfax First and Economic Success strategies and aligns with the Board of Supervisors public engagement.

The PLUS Modernization initiative and associated projects implemented the best fit IT solution to meet the overall objectives for business functionality, customer service, and technology needs of County departments involved in the regulatory land use and development processes and to modernize and enhance the County's land use business architecture and its underlying technologies. PLUS replaced legacy systems that operated on obsolete technology architectures, and numerous complimentary systems with custom interfaces that were developed to meet evolving business requirements over the past two decades. The legacy systems could not be modified to holistically accommodate the rapidly increasing changes in land planning and development business processes.



The PLUS project replaced and consolidated these aging systems with a modern technology platform driven by re-engineered, streamlined, and integrated business processes across the five major land use stakeholder agencies. This project worked with

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the ongoing Electronic Plan Submission Project (ePlans) to deliver technical integration and functional interoperability. Key features and accomplishments include:

- Executive sponsorship and governance by the Deputy County Executives for Land Development and Information, and a Senior Executive Steering Committee comprised of the Chief Technology Officer, IT Program Directors for Solutions and Land Development, GIS and Web in DIT, and agency directors of the five major agencies associated with the land use process. This group provided leadership and strategic direction for the project including goals, timeframes, and priorities.
- Key leadership for the business scope and process improvement opportunities and goals provided by the Department of Planning and Development (DPD) and Land Development Services (LDS). Other core stakeholder departments include Fire and Rescue – Fire Prevention (FRD), the Health Department – Environmental Health (HD), and Department of Code Compliance (DCC).
- County staff conducted independent assessments of current procedures and processes, benchmarking the County against other best practices, identifying opportunities for improvement, obtaining input from the development community, developing recommendations to improve services and operational execution and performed an in-depth market scan for solutions.
- An agile development approach for the PLUS system was adopted to deliver the software on an incremental basis, and continuously improve with end-user feedback to ensure the system meets current business needs. The software platform was upgraded to the most current version.
 - ✓ Release 1 was successfully launched in the second quarter of FY 2021.
 - ✓ The PLUS Project Roadmap was updated in the fourth quarter of FY 2021.
 - ✓ Release 2 was successfully launched in the first quarter of FY 2022.
 - ✓ Release 3 was successfully launched in the third quarter of FY 2022.
 - ✓ Knowledge Transfer sessions from vendor to County staff took place in the fourth quarter of FY 2022.
 - ✓ Release 4 was launched in the second quarter of FY 2023.
 - ✓ Project completion successfully achieved in FY 2023.
 - ✓ PLUS postproduction stabilization is in progress which includes the migration to SaaS platform and is targeted to be completed in FY 2025.

The Department of Information Technology provided the technological leadership and worked closely with the above core departments to modernize and replace most of the legacy systems and supporting system silos that support land planning and development, inspections, code compliance processes, and provides contemporary capabilities for Web, mobility, and data analytics.



3.9 INFRASTRUCTURE AND PLATFORM SERVICES

The Infrastructure & Platform Services program, one of the critical foundational programs, supports the County's mission for an always-on government enterprise, supporting a modern workforce with access tools such as artificial intelligence while providing protection by best-in class security models. The overall goals of the infrastructure & platform services are:

- To establish a secure, stable & responsive technology environment
- Provide centralized enterprise network services
- Provide interoperable and ubiquitous communications
- Provide an architecture that allows for anywhere, anytime, any device access, and
- Provide support for validated demands for new and more sophisticated technology services and solutions.

The infrastructure & platform teams have devised and delivered a strategy in alignment with the DIT Strategy.

The strategy is based on 3 major market forces: Shift to Cloud & Changing Landscapes; Staff shortages & Workforce optimization; and Changes in Security threats and Work patterns.

Market Force	Platform Strategy
Shift to Cloud & Changing Technology Landscape	• Cloud Smart Operating Model with Software Defined Networking and SaaS First Mentality
Staff Shortages, Workforce Optimization, and Project-Based Funding	• Simplified Architectures with Limited Post-Project Operational Overhead
Changes in Security Threats and User Work Patterns Required a Rethink of Traditional Security Concepts	• Move to Zero Trust Architecture with an Assumed Breach Mentality

CONTINUOUS IMPROVEMENT

While the industry has seen a shift to cloud-based platforms starting over 10 years ago, the County's application delivery models differ from many of their private sector peers due to the broad range of existing Fairfax application platforms, application dependencies, authentication requirements and other factors. Fairfax needed to understand how the shift to the cloud could potentially impact the 4 primary application delivery models that DIT supports for Fairfax as follows:

1. **Mature On Premise Applications** – i.e. applications delivered on physical and virtual machines on premise with cost mitigation and security as primary requirements.
2. **Vendor Managed Applications** – i.e. vendor delivered applications (whether on prem or hosted by the vendor / off prem), where vendors are moving to hosted models (often in AWS but sometimes in their own private clouds or other public providers).
3. **Software as a Service (SaaS) and Platforms as a Service (PaaS)** – i.e. high-quality services delivered at scale with limited risk to the County via platforms such as Microsoft 365, ServiceNow, and other SaaS industry standards.
4. **Public Cloud** – i.e. applications running in AWS, Azure, Oracle, or tier 2 public clouds; primarily new applications or workload types (i.e. experimental apps, AI, etc.).

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For the infrastructure team, a major focus is ensuring the Private Cloud deployments are successful. In addition, the infrastructure team mirrored the DIT Strategy to adopt SaaS and PaaS based platforms wherever possible, to simplify operations. Where SaaS/PaaS was not possible the next-best architecture is typically software defined – whether on the computing side, storage related, networking, or security functions.

Within Fairfax DIT, people are our most precious resource. Whether to differentiate our organization, keep the lights on, or to innovate; our largest budget item and most critical factor in the infrastructure & platform strategy is our success in recruiting and retaining excellent staff, in the competitive Northern Virginia jobs market.

- **Workforce Optimization:** DIT is dedicated to acquiring, developing, and competitively compensating high-performing human capital resources to sustain and enhance Fairfax County's complex IT environment.
- **Government Funding Requires Low Staff Overhead:** As most IT projects are capital investments, and many others are funded by Federal programs such as ARPA, these funding streams are Capital projects, intended to be short term projects and short term in nature. After the initial investment, existing county employees typically must manage the infrastructure. The infrastructure team seeks the simplest way to manage technology platforms, with best-in-class support, user experiences, and user interfaces, so the fewest FTEs support the most technology capability.
- **Simplification as a Solution:** Simplifying IT processes and systems can alleviate the talent shortage by making existing resources more efficient. This tenet of the infrastructure team's strategy is probably the single most critical factor DIT considers when evaluating new technology solutions. DIT gains efficiency when selecting solutions that can build on staff skills, integrate automation and can be deployed in a SaaS model.

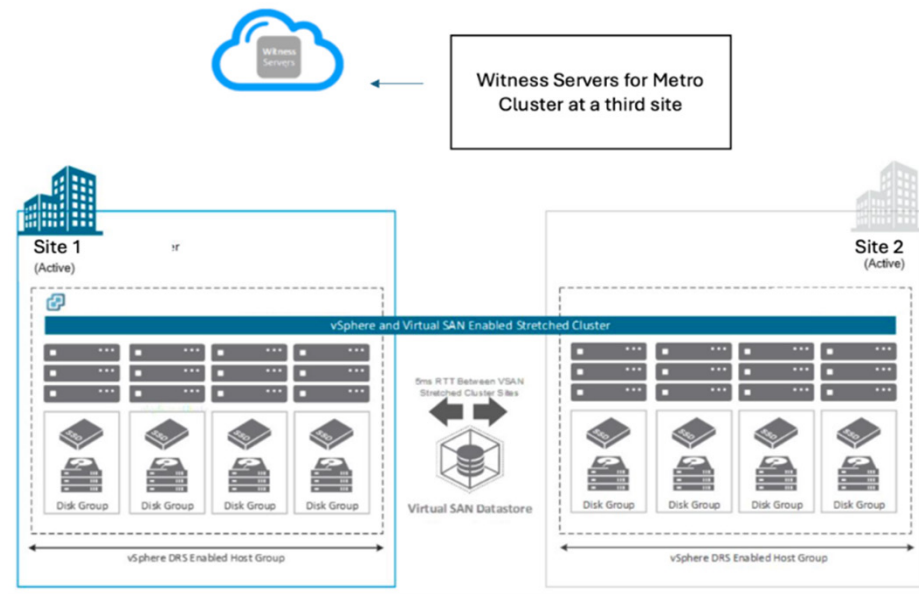
The security framework proposed for the infrastructure team also seeks to integrate with the security requirements and tools specific to the Security, Networking and Application teams. Meshing these elements together delivers an efficient, integrated and cost-effective security strategy for Fairfax.

Based on a combination of the market forces driving IT Platforms Strategy, the team came to understand the Zero Trust model, which represented the next step in organizational security to help prevent breaches against next generation threats. A Zero-Trust based SaaS solution provides Fairfax a cloud console with granular security controls that enable IT to quickly adapt to zero-day attacks, application hosting or device changes, user entitlements, BYOD, remote workers, and many other issues.

The County has **completed most** of the modernization in alignment with these core platform modernization strategies. We have documented results that have maximized **organization nimbleness** and the **ability to adopt cutting edge technologies** for the benefit of citizens, with the most **cost-efficiency** possible for taxpayers.

Most importantly, our focus on **operational simplicity** ensures government staff can manage the environment and are less likely to rely on external contractors to perform core functions. The result of this strategy is a technical foundation where new technologies may be securely adopted rapidly, whether they be cloud based, corporate application based, or in the hands of end users.

To support and be aligned with the industry's shift to cloud, increased security considering more recent threats, and to simplify the network to make it more manageable for county FTE staff, the infrastructure team continued expansions of the Private Cloud project. The immediate result was an increase in Disaster Recovery (DR) capability and continuous operations, automating failover between the County owned data center, and their second site at alternate data center.



There were many additional capabilities identified beyond Metro Cluster, that were realized after the deployment. These include:

- ✓ Deploy application isolation for a comprehensive Zero Trust Architect approach to back-end applications, and to complement the county's user segmentation.
- ✓ Ability to reduce costs and improve services with modern load balancing.
- ✓ The capability to move backend enterprise applications to a public cloud (AWS, Azure, Oracle, and many other clouds),
- ✓ Application aware Intrusion Detection and Prevention System (IDS/IPS) to uplevel security awareness of internal threats



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Software Defined Load Balancing: The infrastructure team has evaluated the benefits, costs and complexity associated with shifting from physical load balancers to virtual instances and noted significant benefits as follows:

- Reduced Hardware Costs & Simplified platform management
- Dynamic Scalability.
- Enhanced Security and Compliance

Zero Trust Employee Remote Access: DIT stood up a remote access replacement for all employees by replacing legacy VPN and other remote access solutions with a Private Access solution. This private access solution provided unique security, management, and agility capabilities built into their cloud platform.

By adopting this platform, initially for remote access but then expanding remote user security controls, the County now has a fully built out and configured platform in place, to deliver robust security as a service, that can easily be expanded to in-office users. Standardizing this Zero-Trust Architecture that delivers cloud agility and a SaaS/PaaS consumption model make this an easy win for the entire organization.

Resiliency and Classification: The county has always prioritized resiliency – whether operational, to avoid catastrophic impact from disasters, or to mitigate human error.

After careful planning, DIT has initiated numerous measures to uplevel disaster and ransomware preparedness to ensure the County can deliver on its mission and reduce risk to staff and citizens. The following projects were completed:

- Resiliency and foundational data security, and incidence response solution
- Best-in-class data classification and security alerting solution

Upleveled Disaster Recovery and Continuous Operations: This enabled automatic failover of applications without human intervention from the County data center to the alternate site, a significant enhancement in Continuous Operations (COOP) stance.

To support data center consolidation, DIT started an initiative to optimize physical rack space, power, cooling and platforms to manage.

The Fairfax private cloud is an ideal platform to support mature County applications that require high performance, reliability and flexibility. Running these applications in the low-cost, secure model that Private Cloud provides is ideal, until they are replaced by SaaS or at which time the vendor managing the application moves to a hosted model.

Teams, Productivity Suite, & Move to Teams Voice

As COVID necessitated remote work nearly overnight, DIT enabled the organization's move to Microsoft Teams as the new hub for most employees' work. Based on the roll out and the resulting reliability of Microsoft Teams as a voice service, the infrastructure team investigated moving backend voice services to the same platform.

Modernization of Contact Centers

The county had an aging Interactive Voice Response (IVR) system. Modernization activities are underway to realize the following anticipated results:

- Significant Improvement in citizen services / end user experience
- Ability for services like SMS text messaging and different ways to communicate with citizens, made possible on the new platform
- Integration of call data regarding the constituent that can integrate and feed into new County CRMs
- Significant saves over legacy IVR, which can be reinvested into capabilities further increasing citizen experience and communication methods.

Unified Communications Modernization

- This initiative will provide a more modern end user experience, and a cost effective and easier to support environment for DIT overall.

311 Non-Emergency Enhancements – Citizen Facing AI Bots with Zammo

- The county's 311 line for non-emergency calls has historically consisted of a basic phone number with call forwarding. The County endeavored to transform this citizen touchpoint with a next generation enhanced user experience.
- DIT is currently in the process of adopting an AI driven conversational software platform that delivers human-like chat bots 24/7 when county staff is not available. This integrates with the existing and new IVR systems, enabling better cross-channel reach for county staff and significantly elevated experience, including for those requiring accessibility considerations.

VTC Project to Enable Hybrid Work

- The team is rolling out modern VTC devices across the County. This will further enable hybrid work for on-site and remote employees.

What's Next to Continue to Enhance Productivity

There are three add-on projects that the County infrastructure team plans to pursue to continue to uplevel citizen facing services while dramatically reducing costs from legacy voice systems.

- **Voicemail Migration** - The county will enhance voicemail capability, in a single consolidated platform for all voicemail. The elimination of legacy platforms will enable new user-feature ready features like email-based voicemail.
- **Call Recording Modernization** - Moving to Call Data Recording will save many thousands for the county while increasing service quality. This includes advanced capabilities for monitoring sensitive calls – such as threats made to police or other departments, while adding intelligent invoice auditing, to limit double-charges related to telephony costs.
- **Unified Phone Monitoring** - For a single consolidated dashboard of all phone systems, and a central monitoring console. This will enable DIT's objective of being able to monitor the health of all phone systems from a single console.

Application Modernization and Services Optimization

Infrastructure team works to anticipate the needs of application and department owners, always looking for ways to optimize existing services. Below is a summary of recently delivered application modernization and optimization efforts, delivered:

- **Deployment of Application Monitoring Platform**
 - ♦ Portal created so application owners can monitor applications and optimize end user experience.
 - ♦ When usage increases, performance spikes, or challenges arise, owners can self-service and self-mitigate without the infrastructure team needing to be involved.
 - ♦ Enabled prediction of capacity management where deployed

▪ Deployment of Containers and Micro Services

- ♦ The future of application development is in using Containers and Micro services. Containers are lightweight, portable, and scalable runtime environments that are isolated, consistent, and efficient. They are even more nimble than virtual resources, and more cloud portable.
- ♦ As application modernization is accelerated – the team is working on a focused plan around container adoption.
- ♦ Better and more refined root-cause analysis tooling, which will become even more critical as applications modernize.

3.10 BUSINESS APPLICATIONS

In response to the growing need to align several areas, the Business Applications division was established to unify important technologies that support various business functions and processes. Within this area, customer relationship management, automation, and the rapidly accelerating area in artificial intelligence, specifically business uses of generative AI were aligned to ensure that systems are designed and deployed that enhance organizational operations and processes to improve efficiency and meet both staff and citizens expectations for modern tools and access to government services. As the need for real time information and seamless interaction with government services continues to grow dramatically, agencies and business units must leverage technology to quickly provide information to the public while capturing meaningful data such as constituent interactions and responses to inquiries. This program area supports both the applications that collect and automate important information to enable the business to understand what requests for services or inquiries have been made and to empower County business areas to rapidly respond with timely information.

As a newly established division, Business Applications works across DIT areas and agencies to administer and provide tools, standards, and data in a common platform for rapid and low code application development, process automation, and AI services in a method that keeps county data secure in enterprise County systems. The business applications team promotes agile development practices that maximize time to value for software solutions and systems. This division promotes effective and efficient government by integrating with a cloud first and API approach to support seamless and secure data exchange to improve both internal and external customer experiences. The business applications division supports enterprise Customer Relationship Management (CRM) technology platforms that enables a reusable data model, that enables faster development times while maintaining the security and integrity of each agency or business area.



This division aligns with the Countywide strategic plan and supports the replacement of several customer facing applications/ solutions with more advanced applications to improve internal efficiency and ensure equitable access. This business focused applications division also focuses on legacy modernization and has successfully completed data conversion, migration, and

implementation of a variety of applications now stored in the County's enterprise. Applications and solutions have been deployed to support eviction prevention efforts, to modernize the Department of Cable and Consumer Services complaint process, to support various public safety initiatives and programs, as well as supporting operational needs for County services such as the Adult Day Health Centers. Business applications not only develop in a cloud native platform but provide standards and review of vendors developing within the County enterprise Power Platform or Dynamics tenant. Rigorous standards and best practices are required to be followed to ensure the security, maintainability, and scalability of these applications. With an enterprise oversight role, this division has ensured the success of multiple other projects partnering with the Health and Human Services and the Revenue Services Branches. Business applications will continue to plan and execute migrations from legacy systems to meet the County's digital transformation and cloud goals as well as supporting the County's strategic initiatives. As administrators of the enterprise Low-Code application platform, the team facilitates increased efficiency and effectiveness in many business areas. Furthermore, this team works with agility to rapidly deploy and support the emerging technology needs that sometimes cannot be predicted, for example leveraging APIs and automation for SMS texting, document approvals, and interactions between systems and applications. Ultimately the efforts, technology solutions and work aligned into the Business Applications division aims to modernize and eliminate redundant systems, providing tangible evidence to citizens that their government is efficiently working to provide better user experiences, data, access to information, and improved accountability/compliance.

3.11 DATA ARCHITECTURE AND ANALYTICS

At the core of operations, data is a key enabler for delivery of high-quality services by providing actionable insights to the organization and the public in Fairfax County. Data architecture and analytics is a strategic initiative to position the county to best use technology to harness the power of data to improve processes, support digital transformation, facilitate improved decision making, and to continue building trust with residents. To ensure the County's ability to use data, foundational components of data architecture have been established to accomplish the following:

1. Establish a modern data estate that leverages the cloud, advanced technologies, and tools to drive innovation and scalability
 - a. Integrate data collection and analysis by adopting a standardized data framework.
 - b. Ensure standards and protocols are in place to maximize value.
 - c. Implement automation capabilities to streamline data processing and analysis.
2. Ensure technical data governance
 - a. Establish technical data governance policies. Enable technical processes and frameworks to ensure accuracy, privacy, and security across the enterprise.
 - b. Implement and expand data classification and access control mechanisms to protect sensitive and confidential resident data assets.
 - c. Automate regular audits and assessments to monitor and enforce adherence to policies and standards.

Aligned with the technical architecture this strategic area of the IT is focused on ensuring county staff and residents know that data is used for making a better government through analytical insights and data products that are focused on the following:

1. Facilitate better data driven decisions



- a. Use public input and data to anticipate challenges and opportunities.
 - b. Find innovative ways to provide equitable and meaningful services for the community.
 - c. Highlight disparities within a geographical area and distribute resources equitably through targeted intervention.
2. Build trust with residents through transparency
 - a. Provide residents control over personal data through an intuitive portal and increased visibility about how data is used.
 - b. Provide effective data management so residents can select data privacy levels and update personal information when needed.
 - c. Demonstrate positive community outcomes achieved by utilizing resident data for analytical analysis.

Ultimately, the goal of this strategic initiative is to enable the County to be a data driven organization that uses data to underpin policy, decisions, and actions to improve services and outcomes for residents, businesses, and the County. Leveraging technology methods, practices and tools to support the county's ability to evaluate and monitor performance while helping plan and prepare for the future, predicting issues before they arise. Empowering a data driven organization through technology ultimately supports delivery of high-quality services, operational and county-wide strategic objectives and focuses on community outcomes and benefits.

3.12 ENTERPRISE CONTENT AND DOCUMENT MANAGEMENT

The County established a strategic approach to content and document management by developing an integrated solution on an enterprise platform. Content Management is an organization's foundation for the use of information from structured data (through business applications), and unstructured data in electronic or imaged documents (word processing documents, spreadsheets, e-mail, and reports).

Content Services Platform (CSP) integrates with Cloud infrastructure and is deployed in containers that allows for full portability of data between County private cloud, public cloud, and on-premises platforms. Artificial intelligence can also be utilized for tasks like assigning metadata and even recommending document organizational improvements, and automatically categorizing content based on predefined terms and taxonomies, which allows AI to work at a scale and speed that improve business processes almost instantaneously. This comprehensive approach and associated implementation of technology provides a familiar search engine-like interface for rapid information retrieval. This platform can also integrate with low-code development tools and empower business users to build applications in hours that used to require months of software engineering. CSP APIs enable connections to preferred workflow, collaboration, business intelligence and analytical tools to minimize complexity and training needs, avoid custom software development, and add functionality with a building block approach. This integrated

solution is more cost-effective and provides a seamless integration for use of information exchange and data sharing with other systems required for a complex business transaction.

Content, records, and document management will continue to be a long-term strategy for integration of structured and unstructured electronic and paper-based information and file types to optimize and enhance overall information management, transparency, and decision processes. These initiatives have provided benefits and quality improvements including:

- ✓ Increased staff productivity through the delivery of the right documents at the right time.
- ✓ Enhanced communication and collaboration through shared information.
- ✓ Improved speed of information and transaction flow throughout County agencies.
- ✓ Improved access and security through controlled access to sensitive documents.
- ✓ Reduced time spent searching for critical documents.
- ✓ Improved disaster recovery through electronic storage and backup of information that is far more secure than paper.
- ✓ Reduced clerical, paper, printing, and storage costs.

