SECTION 2

STRATEGIC DIRECTIONS AND INITIATIVES

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Fairfax County's technology strategy incorporates a plan for investments at optimal time to keep pace with technology innovations and growing demands for constituent services. This strategy has helped the County address new economic realities, improve communications, foster open government for public engagement, and leveraged the overall technology portfolio and capabilities on an enterprise scale to meet the County's diverse operational needs. The following key enterprise initiatives are part of this overall strategy.

2.1 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 digital government strategies 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 the 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 on-going improvements of the Web and deploying new services, transactions and social 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 stats:

	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Website Visits	19,105,379	19,311,840	18,160,887	16,314,450	17,821,929	20,382,549
Facebook Reach	28,313,758	58,827,954	91,759,813	66,317,648	76,617,759	95,088,315
YouTube Views	225,120	285,815	305,436	318,264	375,514	762,880
Emergency Blog	349,977	347,896	98,362	161,696	221,372	2,013,020
SlideShare Views	1,209,467	482,708	1,265,402	491,250	1,028,019	1,143,205
Twitter Impressions	23,550,698	56,295,975	69,575,979	62,923,888	65,362,561	75,283,983
TOTALS	72,754,399	135,552,188	181,165,879	146,527,196	161,427,154	194,673,952

Sec 2. 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 seamlessly 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 chatbot, to enable citizen interaction with government on various topics. Launched in October 2019, engagement with the Fairfax Virtual Assistant has increased with the highest number of conversations, over 11,874, between March to June 2020 with COVID specific conversations totaling to over 4,000 as Stay-at-Home orders were in place in Virginia due to COVID-19. The Department of Information Technology and Office of Public Affairs work together with agencies to determine the most asked questions by their customers to inform content added to the Virtual Assistant.

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.

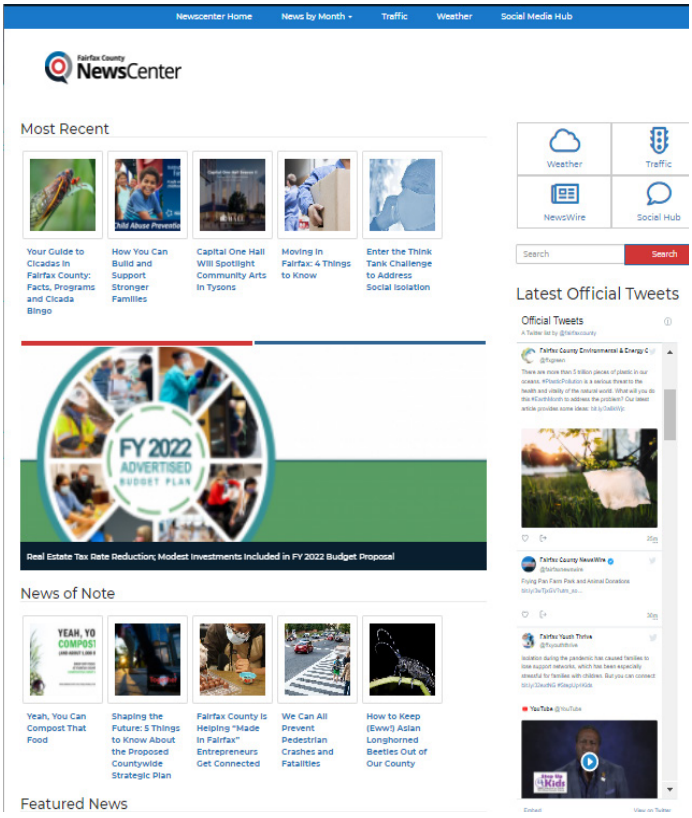
The Fairfax County website provides secure and expedient access to hundreds of key online services for its constituents to pay, register or apply for services like tax payments, real estate information, permits, housing, jobs, basic needs, park classes etc., The convenience of conducting business online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

Sec 2. Figure 1 - Fairfax County Website

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 ways residents and employees can stay connected with the County, including news articles, social media hub, podcasts, RSS feeds, 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.

E-Government 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 its efforts in integrating Artificial Intelligence concepts to provide more efficient services to the public.

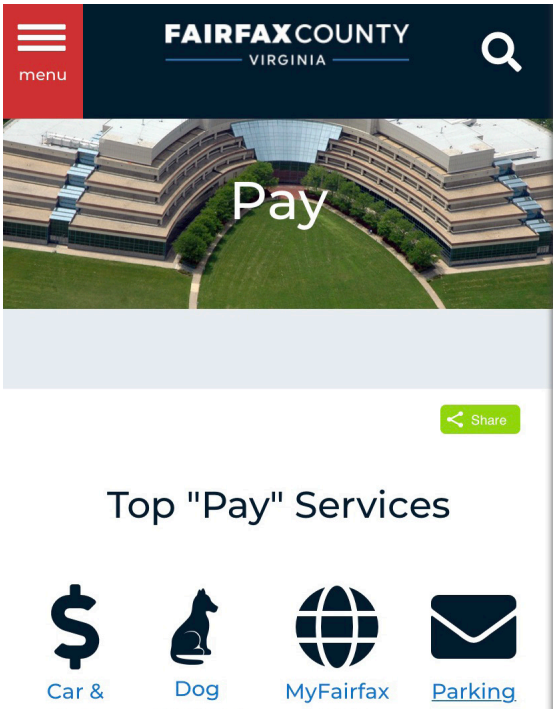


Sec 2 Figure 2 - Fairfax County NewsCenter Tablet View

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.

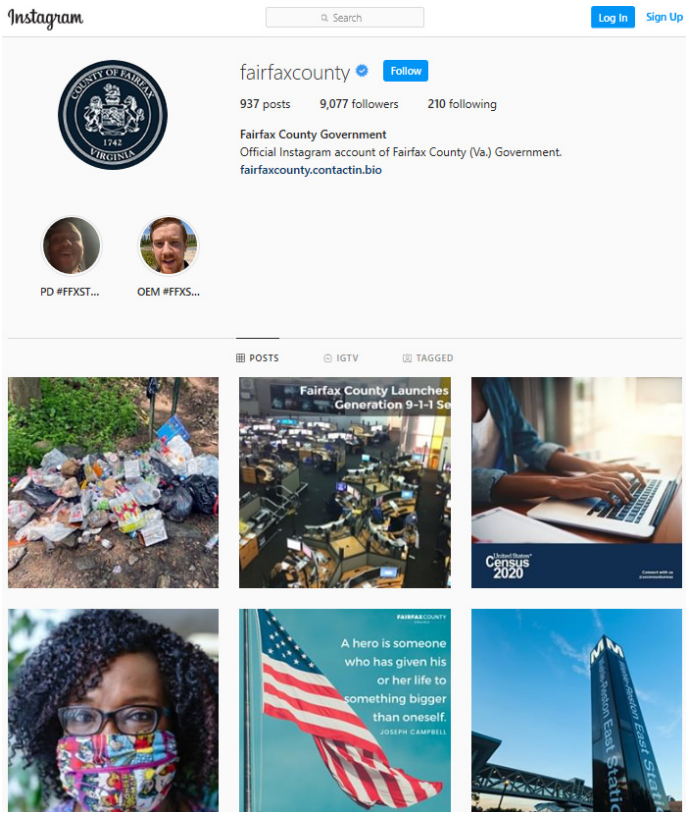
Supporting the County's strategic vision and striving to create a citizen-centric approach that goes beyond the website, Fairfax County pioneered the availability of governmental services on mobile devices. In enhancing the County's long-standing goal that our community should access their government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



Sec 2 Figure 3 - Fairfax County Services Phone view

the introduction of efficient and cost-effective mobile apps and services.

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 43,350 times since its launch.



Sec 2 Figure 4 - Fairfax County Instagram Account

SOCIAL MEDIA

Social media in Fairfax County has been a significant success to engage and provide services. It continues to grow, proving the County is engaging its residents on platforms people use daily. News articles published on the website are integrated into Facebook, Twitter, Nextdoor, Instagram, Flipboard, Apple News and Google News. The County currently has 23 Facebook Pages, with additional 10 Facebook pages for each Board of Supervisors which reached over 95 million people in FY 2020, about 235 percent increase from FY 2015. Across the County's 20 Twitter feeds, Twitter impressions grew from 23,550,698 in FY 2015 to 75,283,983 in FY 2020 – an increase of over 220 percent from FY 2015. 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, 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 will continue to be important. 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 the leading E-Gov tools of choice in the years to come.

AUDIO AND VIDEO

Fairfax County launched an Internet streaming radio station simply named Fairfax County Government Radio in 2014. The County owns and produces large amounts of audio content for the County's SoundCloud social media account. The public can listen online (https://www.fairfaxcounty.gov/publicaffairs/radio) providing access to County information 24 hours a day, seven

days a week. During emergencies, the station is used to share important emergency information in an audio format, similar to the way the County currently uses other 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 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 E-Gov program will continue to affirm the County's strategic vision and goals, 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.

2.2 Geographic Information Systems (GIS)

Geographic Information Systems (GIS) are a strategic foundational technology, integrated with numerous County applications and business processes. It is an essential component of County operations and is heavily used by a wide range of County agencies. 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 utilize GIS as much as possible to support their lines of business.

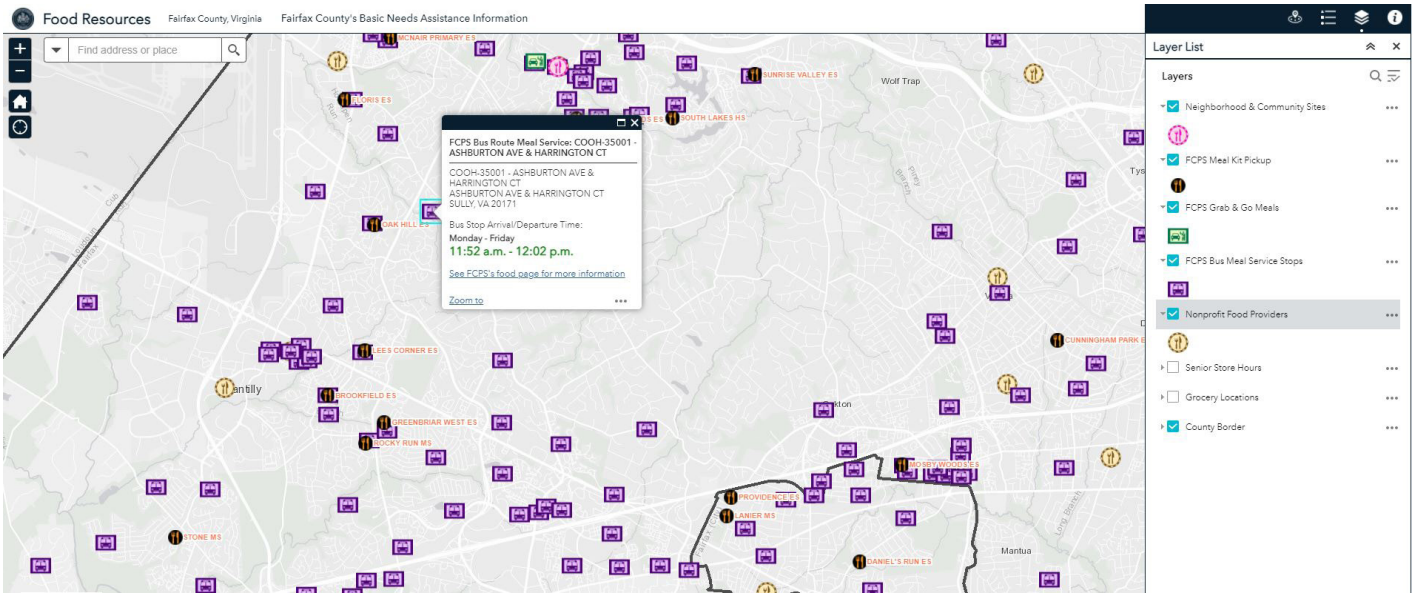
Fairfax County's enterprise GIS architecture is undergoing a multiyear modernization plan to ensure that a modern business class IT system underlines the platform. This undergirding will ensure that a resilient GIS system can be relied on as various business systems, like the Planning and Land Use System (PLUS) move into production. This modernization ensures that a resilient plan will be in place, that production servers and the Enterprise portal will be resourced and resilient with disaster recovery capabilities. This effort will also support widespread mobile use of GIS and the adoption of new capabilities like real time tracking, routing, and data analytics.

Web-based GIS applications continue to be central to communicating locational based information to staff and residents. Additional focused applications have been created by County staff for operations and the public in FY 2021. For example, to assist the County response and the dissemination of public health and other contextual information, the COVID-19 Geospatial Resources hub site was deployed (figure 5). This site housed maps and applications, COVID-19 case information for the Fairfax Health District and the Commonwealth, demographic and vulnerable population information, and available downloadable data.

At the beginning of the crisis, many students lost access to school meals. For many, the location of food assistance sites for families and people in need were not well known. To address this need, County staff developed the Food Resources application, which provided a spatial search capability with information about neighborhood and Community food sites, school meal pick-up sites, school bus meal services stops, nonprofit food providers, and grocery stores with hours of service for seniors in one location. This concept was adopted by the region and through cooperation with COG and the region, a permanent viewer is in development to serve the region regardless of jurisdictional lines (Figure 6).

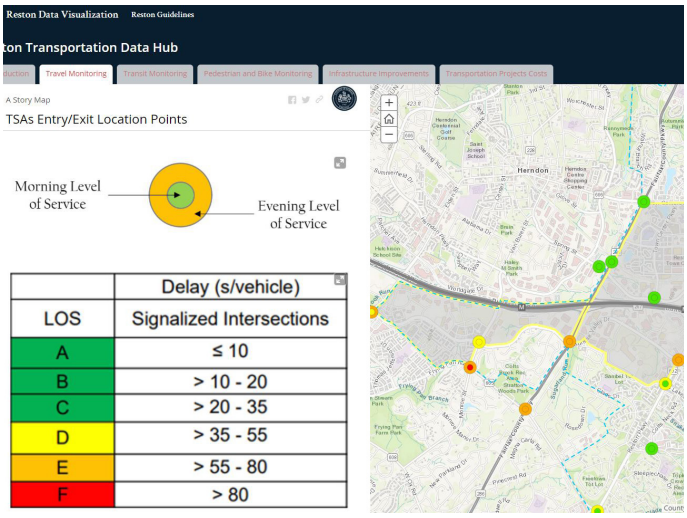
Sec 2 Figure 5 - shows COVID-19 Geospatial Resources Hub

These are recent examples of applications that now permeate the County web site and GeoPortal. The GeoPortal alone hosts 93 applications (Figure 7 and 8), sixteen more than in the summer of 2020, a 20% increase with another 50 mapping applications embedded on various pages. Cumulatively these applications have over 1.6 million views. In FY 2022 rapid expansion and utilization of GIS technology will continue to grow.

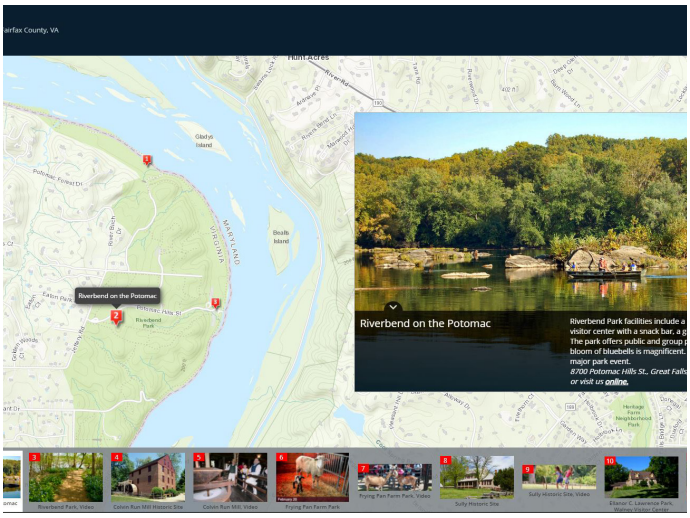


Sec 2 Figure 6 - Shows map with food locations

Most GeoPortal (https://www.fairfaxcounty.gov/maps/interactive-map-gallery) applications are focused and thematic, but the public also had need for a general GIS viewer and reporting application. While County staff have had access to the internal GEM application (Geographic Exploration & Mapping) and use it daily, residents often remarked that they did not. To address this gap, the JADE was developed in FY 2020 as a public facing sister to the GEM application and contains largely the same information, providing residents easy access to GIS information that staff use in assessments and reviews. These applications will continue to receive enhancements in FY 2022 and their use continues to grow (Table 2).



	Delay (s/vehicle)
LOS	Signalized Intersections
A	≤ 10
B	> 10 - 20
C	> 20 - 35
D	> 35 - 55
E	> 55 - 80
F	> 80



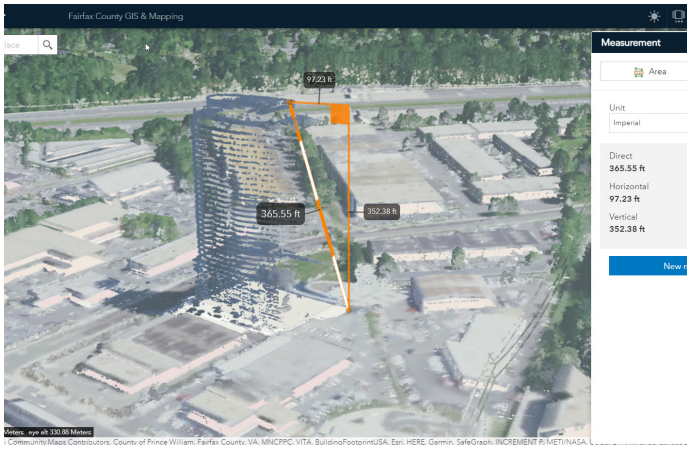
Sec 2 Figure 7 & 8 - shows range of applications available in GeoPortal

	Sessions FY 2021	Sessions FY 2022	% Change
GEM (internal)	160771	195733	22%
JADE (public)	92324	133154	44%

Sec. 2 - Table 2 shows change percentage for use of GEM and JADE systems.

For the first time in 2015 the County obtained LiDAR (Light Detection and Ranging - a remote sensing method used to examine the surface of the Earth) for the entire County. Acquired in partnership with the US Geological Survey and the Department of Public Works and Environmental Services (DPWES), this immensely detailed data set contains over 7.6 billion data points (250 GB of data), approximately 2 points per sq. meter, that provide elevation data of the surface of the entire County, including, trees, terrain, and the built environment. Fairfax County continued this partnership to collect more highly detailed surface data in 2018, this newer collection was at 8 points per meter totaling 46 billion data points and over 1 TB of data. The resulting detail above ground and the ground level provides great advantages. Accurate height measurements of buildings, suspended cables, and the height of trees countywide can be ascertained by anyone with an internet connection (figure 9). Figure 10 shows a wide view of the data and reveals detail of every natural and man-made feature (figure 10). Using this above surface data, LiDAR has been used in line of site analysis for impact analysis of proposed developments (figure 11). In addition to line of site analysis, with above surface data, accurate building measurements can now be made (figure 9). Figure 12 shows the high surface resolution that the LiDAR provides. Surface elevations anywhere in the County can be determined with a click and analytic comparisons made of stream conditions over time to determine the extent of bank subsidence and other hydrological processes.

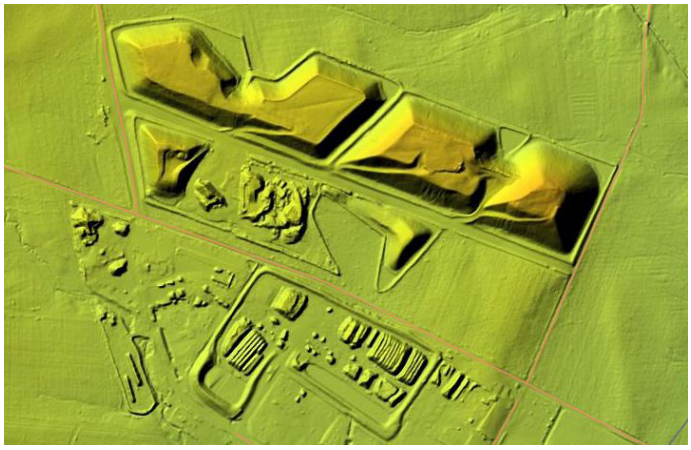
Oblique imagery and its related software constitute one of the County's core GIS data sets and technology. Originally flown for the first time in 2003, it is a key tool for multiple County agencies. Among many other uses oblique imagery is integrated into CAD/911 operations, Department of Tax Administration 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 buildings in Virtual Fairfax (figure 13). The newest oblique Imagery was delivered in the summer of 2019, with the next acquisition scheduled for spring



Sec 2 Figure 9 - shows height measurements of buildings, etc.

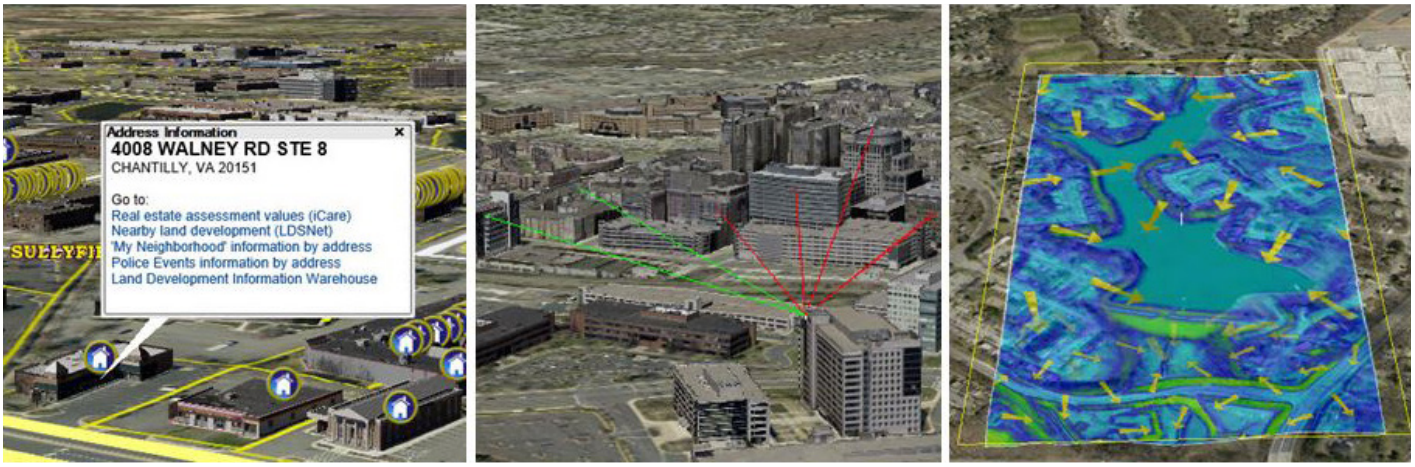

Sec 2 Figure 10 - shows wide range view of data


Sec 2 Figure 11 - LiDAR line of site analysis


Sec 2 Figure 12 - shows LiDAR high surface resolution

2021. The County will now fly oblique and orthoimagery every year. Below is also an example of the high-resolution oblique imagery for Tysons Corner (figure 14).

Planimetric data is another foundational data set for almost all County GIS applications. Accurate planimetric data depends on high resolution and high accuracy Ortho-Imagery. The County partnered with the state every four years to purchase new Ortho-Imagery, this partnership significantly lowered the cost of the imagery which is used on the web and as a foundation for nearly all GIS data layers. The Planimetric Data Update was jointly funded and completed through a partnership with the Department of Public Works and Environmental Services (DPWES). The work significantly expanded the planimetric features in the GIS data warehouse: over 13 million new planimetric features were added to the GIS planimetric data – an increase of over 400% (figure 15 and 16). The County's GIS Office collaborates with DPWES to determine the optimum refresh cycle and funding approaches. The update to the planimetric process kicked-off in spring 2018 and uses the 2017 imagery. Currently, the update is approximately 85% complete and will be finished in CY 2021.



Sec 2 Figure 13 - shows 3D buildings in VIrtual Fairfax

Addresses are essential to almost all County operations. The GIS office collaborated with other County agencies to bring the Master Address Repository online in 2004; GIS now maintains the data in the system. The Master Address Repository (MAR) project has proved to be invaluable for the CAD/911 system as well as other key County systems including land development and tax administration systems. The MAR is the authoritative source of parcel (sites) addresses in the County and is essential for effective operation of the CAD/911 system. It now has over 371,700 unique addresses. The GIS Division plans to refresh and modernize this application in FY 2021.

The availability of key County data digitally 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 look back in time to see past conditions. Acquisitions of these datasets is managed by the GIS Division; parcel and zoning data are also key datasets regularly maintained by the GIS Division. All parcel map changes are posted to the internet daily, providing web users of the Digital Map Viewer (DMV) with the latest versions of the maps. Currently, on average, over 13,000 DMV maps are viewed or downloaded per month.

The County's Geographic Exploration & Mapping (GEM) application is heavily used by County staff. The GEM is a web based light GIS that has replaced expensive desktop software for many with an easy to use and informative application supporting various County business lines, especially land development. Many work groups use the GEM to answer questions about geographic phenomenon relevant to their business. In response from the Environmental Quality Advisory Committee and County agencies, a public version of the GEM, the JADE, was released in FY 2020.

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 Council of Governments (COG). Interoperability across National Capital Region (NCR) and with the Federal Government for emergency response purposes is also crucial. Fairfax is a member of the COG GIS Executive Committee and has helped guide the development and implementation of the National Capital Region Geospatial Data Exchange (NCR GDX) through its membership in the project's executive committee, project, and project management. The project went live in spring 2012 and

has transitioned from custom software to an industry standard, ArcGIS Online. 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.

Sec 2 Figure 14 Oblique Imagery of Tysons Corner

The CAD2GIS project was established as part of the NCR GDX program. CAD2GIS establishes geospatial data feeds from live CAD2CAD data. 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.

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. As the region begins the transition to Next Generation 9-1-1 (NG9-1-1), the GDX Minimum Essential Datasets (MEDS) was expanded to include the required NENA GIS Data Model compliant datasets to support NG9-1-1 operations. In 2019, NCRGDX created 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.

Interoperability is crucial in Northern Virginia as emergency response personnel regularly crosses 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 since there are several locations where the neighboring jurisdiction's fire station or equipment in route is closer to the event. The GIS office maintains Fairfax's street centerline data used in the CAD/911 system and provides the data to the Commonwealth of VA which aggregates Fairfax County's data into a state-wide centerline file. The Northern Virginia Regional Routable Centerline (NVRRCL) project has been an important and ongoing project enabling centerline data sharing for the CAD/911 system. The Regional Routable Centerline project was funded by a grant from the State's Wireless 911 Board. 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

Sec 2 Figure 15 & 16 - shows Planimetric data

transition to NG9-1-1, regional data plays a critical role. In addition to road centerline requirements, NG9-1-1 requires multiple boundary files which will require regional coordination and collaboration to ensure seamless interoperability.

Next Generation 9-1-1 (NG9-1-1) is a total re-engineering of the underlying telecommunications and operations of 9-1-1 by moving it to an internet-based system. The National Capital Region (NCR) is in the process of replacing its 40-year-old legacy 9-1-1 system with NG9-1-1 which will allow seamless interoperability across the region in addition to allowing transmission of voice and text to 9-1-1 and digital media such as video and photos to 9-1-1. NG9-1-1 is dependent upon GIS data to route 9-1-1 calls to the proper PSAP (Public Safety Answering Point) or 9-1-1 center with greater accuracy than today's legacy system, which relies on service provider tabular databases called the MSAG and ALI to route 9-1-1 calls. NG9-1-1 utilizes geospatial call routing which uses GIS data to validate address locations and perform spatial queries to determine the proper responding agency. As a result, supporting GIS data must be regional in nature requiring a greater dependency on regional coordination and collaboration. As part of the GIS data readiness efforts, the NCR underwent a 2-year data validation and synchronization process to analyze and review GIS address point and centerline data to the tabular service provider databases to ensure readiness to support NG9-1-1 geospatial call routing with a goal of a 98% match rate between the datasets. At the conclusion of this task, the NCR was able to achieve over a 99% match rate exceeding national recommended guidelines. Fairfax County will be the first in the NCR to deploy NG9-1-1. As other jurisdictions begin to implement and maintain geospatial data to support NG9-1-1, continued collaboration with neighboring jurisdictions will be critical to ensure seamless interoperability across the region.

GIS technology continues to be an important asset in emergency management. The GIS office has a team of analysts trained to respond and assist the Office of Emergency Management 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 and work closely with the Situation Unit to keep the emergency operations staff informed and working from a common operating picture.

The volume of GIS information continues to grow in Fairfax County. The GIS data warehouse holds over 1400 layers of Fairfax County data and over 400 more layers that cover neighboring jurisdictions. The overall size of the vector data in the enterprise GIS database stands at over 150 GB, and the raster data is now over 15 TB and includes both orthoimagery and oblique imagery. The LiDAR data acquired in 2012/2014 added over 400 GB of data, and the latest acquisition of LiDAR data, received in 2020, added over 2.4 TB for a total of nearly 3 TB. The volume of data in the digital map viewer grows annually as new sets of property and zoning maps are added. Currently there are nearly 51,060 pre-made maps and images of historic maps available on-line.

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. The awards recognize GIS's achievement in fostering and expanding the use of GIS applications to improve County operations:

- 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.
- 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 Counties GIS excellence award 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.
- 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 MWCOG GIS Committee, and also 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" which promotes the use of GIS and development of new GIS applications through County wide competition and awards. In 2019 the GIS Division hosted the 20th anniversary celebration of GIS Day in Fairfax County.

2.3 CUSTOMER RELATIONSHIP MANAGEMENT (CRM)

Expectations for modern access and interaction with government services continue to expand dramatically. Agencies need automated ways to capture citizen interaction, and to track response to inquiries, requests for services and complaints. The County needs a common solution that integrates with e-government capabilities and the Web, enables improved customer experience and public engagement, and provides an enterprise-wide view of constituent needs and concerns, and agency responses. Fairfax County continues to respond to this growing need through Customer Relationship Management (CRM) technology applications, which allows for centralized rapid application deployment. This enterprise application platform provides agencies and their staff improved opportunities for providing citizens quick and convenient access to information about County programs and services.

This project supports the replacement of several customer facing applications/solutions with more advanced application development platforms. This initiative successfully completed data conversion, migration, and implementation of the contemporary CRM application for various divisions and programs in the Neighborhood Community Services, Community Services Board, Fire and Rescue Department, Department of Tax Administration, Office of Public Private Partnerships, Office of Public Affairs - VFOIA (VA Freedom of Information Act) Front Desk, Media relations, Sully and Mount Vernon Board Offices, and Health Department's emergency response solution. Future phases will continue planned migration from the legacy to the new consolidated online mobile app-ready platform.

Staff continues to meet the County's goals in enterprise application deployment across County agencies and support the County's strategic initiatives. Enterprise application platform facilitates increased efficiencies and effectiveness in managing the many citizen requests and interactions within and across County agencies and business functions. It allows a constituent-focused operation where government is positioned to be proactive to citizen concerns by enhancing collaboration among all agencies and by providing knowledge of common issues for follow-up. The platform also improves transparency by allowing constituents to easily view how the County manages their request with a tracking number. Consolidating intakes, reducing the number of duplicate requests, eliminating redundant systems provide tangible evidence to citizens that their government is working for them efficiently with better access to information, optimized issue response/processing, and improved accountability/compliance.

2.4 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).

The County has moved from Enterprise Content Management (ECMS) which was an application that was purpose-built from the ground up, to a **Content Services Platform (CSP)**. A CSP differs from a ECMS by providing a set of base services that can be built upon by others and linked form different applications throughout the enterprise. Historically with business applications built in silos it would require the relocation of documents from one application to another, but a modern CSP is built to tie into any other system the organization uses or may adopt in the future. This solution enables the County to have a rich document management and business process flow for retrieval and storage of vast quantities of required paper records across any systems whether they are onsite, cloud and hosted systems. In addition to fast and reliable business processes, the CSP minimizes the need for storage of paper records, reduces storage space needs, protects against mounting storage costs, and reduces human and physical plant asset risks associated with handling voluminous stacks of paper.

Fairfax County also continues to expand **CSP** by using open and services-based architectures, development tools and application programming interfaces that are transforming the integration story, making it easy for CSPs to be extended, enhanced, and combined with other software, including legacy applications. Department of Planning and Development (DPD) determined that an CSP and scanning affords the best solution for automating business processes and ending the dependence on ever-expanding physical files and providing immediate access to agency related documentation, record recovery and, re-filing processes while also reducing expenses for space, shelving, and storage of paper documents. DPD will continue to develop the on-going strategy including integration with GIS for public access and coordination with the County Archivist for over-all records management for in-house flow from agencies and use of cloud solutions.

Content Services Platform integrates with Cloud infrastructure and is being deployed in containers that allows for full portability 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 to 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 connects 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

2.5 INTEGRATIVE HEALTH AND HUMAN SERVICES MODEL AND INFORMATION TECHNOLOGY

In the last few years, the field of health and human services (HHS) has rapidly evolved. Between the COVID-19 Pandemic, demographic changes, economic changes, and new services and programs, the importance of a health and human model that focuses on integration and interoperability has been affirmed. Individuals and families served by the HHS system often have multiple needs addressed by multiple programs and services. For instance, an older adult, experiencing health and mobility limitations who wants to remain in his home may need at least seven services that currently span four Fairfax County HHS agencies - medication management, nutrition guidance, “meals on wheels”, home based support services, senior housing, transportation support, and adult day health care.

With this in mind, over the last several years, the County has been engaged in efforts to develop a conceptual foundation and business model which tie together the work of various health, housing and human services agencies in efforts to achieve specific outcomes related to the health and well-being of the County’s clients and community. A holistic approach to addressing needs along the spectrum of crisis to self-sufficiency to sustainability, as well as strong communication, coordination and collaboration across programs and agencies are key factors in successfully addressing their needs. The leadership of Fairfax County Health and Human Services (HHS) recognizes that the HHS needs to update its approach to service delivery and management, while

leveraging technology to both improve the client experience and realize operational efficiencies. As we move forward, HHS strives for a model that:

- Ensures integrated delivery, management and evaluation of health, housing and human services
- Is built around a shared vision that focuses on people and their strengths and needs, rather than individual programs, and
- Increases the County's ability to assess program performance, identify long-term trends, and create efficiencies.

The ultimate outcome requires shared planning, robust data, and information exchange to shape policies and future actions focused on improved outcomes and shared accountability. This approach also increases the County's ability to assess program performance, identify long-term trends, and create efficiencies. These integrative initiatives have the goal of delivering person-centered services to County residents enabling a cross-sectoral exchange of process and data that better leverages resources and supports the County's overall goals of safety and health for individuals and families.

Information technology (IT) is an essential tool for gaining a comprehensive view of a clients needs and addressing those needs more effectively. Technology is also a critical enabler of improved collaboration across agencies and external providers and programs and between Fairfax County, the Commonwealth of Virginia, and other localities. Finally, it will enable Fairfax County to leverage data analytics for performance evaluation, policy analysis, program planning and budgeting activities. Currently, there are over 70 information systems used to support the many programs and functions across the Health and Human Services agencies including numerous distinct information systems used for client intake. All this challenges clients navigating the current catalogue of programs, and staff who coordinate services within and across services and programs.

Through the effective use of information technology, the County can deliver a scalable set of coordinated services, improve service quality with more accurate and timely data, bridge service "silos" while increasing administrative flexibility and sustain cost-effective IT assets and services. Seven years ago the Integrative System initiative began moving forward with the establishment of the **Fairfax County Health and Human Services IT Governance Board (HHS ITGB)**. In its work, the HHS ITGB convenes County executive staff, information technology senior leadership, and human service department directors to identify and examine technology trends, programs, practices, and operational requirements affecting human services programs. It establishes strategic direction, policy and priorities for technology initiatives and investments across the Health and Human Service agencies and related partner organizations, promotes an enterprise-level approach and collaboration, and state, inter-jurisdictional, and Federal interoperability opportunities. The HHS ITGB focuses on how the delivery of a consistent level of human services to the citizens of Fairfax County can be influenced and improved by deployment of specific information technologies and data governance. The HHS ITGB seeks to break information silos using technology and coordinated agency practices to provide services system- wide more efficiently and effectively.

HHS has prioritized IT projects that will enable the County to build an IT foundation that supports system integration. The projects are grouped by functionality designed to address a particular Integrative System data management, transaction management, communications or analytics need. Key components that are prioritized for implementation include:

- Document Management
- System-Level Analytics
- Constituent Interaction Management
- Eligibility and Enrollment Management

- Client Register/Master Client Index
- Service Information Exchange, and
- Security and Access Management.

Acknowledging that this is a complex venture, the goal is **not** to build or buy a single, all-encompassing, monolithic IT solution that will address the functionality needs of multiple agencies and the programs they manage. Instead, the aim is to be strategic about County IT investments, planning, and commitment to IT resources. Establishing the foundation for how information technology will be used across the health and human services system is the first step towards a multi-year effort enabling the programmatic innovation envisioned for the system.

DEVELOPING AND IMPLEMENTING THE IT ROADMAP: PROGRESS TO DATE

Previously known as the HHS IT Roadmap, this framework for HHS IT planning adopted by the HHS IT Governance Board reflects an agreement in principle on how the agencies that make up HHS will operate as an Integrative System and how IT will serve as an enabler of optimized, client-centered processes. Furthermore, this process is based on business-driven functional capability expectations and best practices for IT architecture, acquisition, and management; as such it neither prescribes specific IT products or solutions, nor does it advocate for products or solutions from specific vendors. Those details will be fleshed out prior to engaging in specific IT solution acquisitions or build projects. As such, the HHS-IT planning is purposely designed to communicate future IT capabilities and needs in a compelling manner to a wide variety of stakeholders.

The HHS-IT Plan represents the viewpoints and captures the input of multiple stakeholders including but not limited to:

- Program management staff from all eight FCHHSS agencies.
- Executive Leadership from the eight FCHHSS agencies.
- Executive Leadership from the Department of Information Technology (DIT).

The HHS-IT Plan is inherently iterative: Initial work included collaboration of seven capability expectation teams comprised of program management staff from all eight HHS agencies; Process and Data Optimization Workgroups comprised of primarily deputy and division directors; and specific workgroups focused on implementation areas and pilot projects associated with the IT Roadmap.

As the progress evolves and becomes more detailed and prescriptive based on solution acquisition strategies, leadership will explore various options that include leveraging existing County enterprise-wide platforms, build vs buy decisions, and open source arrangements for capabilities for other jurisdictions. The Roadmap is predicated on the need to increase agility in the implementation, management and use of IT; specifically:

- Create a more nimble, responsive approach to IT implementation and provide for a gradual/progressive approach to IT innovation;
- Incorporate “component based” and “service oriented” IT solutions that are designed to interoperate and support various programs/lines of business: wherever feasible, work off common IT components that can interoperate and be replaced or upgraded over time without compromising the functionality and performance of other components;
- Ensure IT supports more rapid, timely changes to policies, business rules and processes;
- Enable greater workforce mobility, user access and self-service where allowable; and

- Enable more significant, ideally real-time interaction across the FCHHSS agencies and programs and with FCHHSS external stakeholders.

Since adoption of the HS-IT planning process the following activities have been completed:

- ✓ Implementation of the first phase of the Document Management component.
- ✓ Kick off for Phase II of Document Management
- ✓ Requirements gathering and vendor engagement for HHS case management and financial management functionality.
- ✓ Incorporation of School aged child care software enhancements into the HHS IT Plan
- ✓ Completion of a pilot of the System Level Analytics component and demonstration to the HHS IT Governance Board.
- ✓ The creation of an HHS data warehouse, a common data model and the use of Microsoft PowerBI dashboards have led to the successful integration and analysis of client-level data within programs that span distinct HHS agencies.
- ✓ Alignment of HHS Analytics with Results base accountability outcomes reporting, now known as Program Metrics.
- ✓ Completion of a Constituent Interaction Management pilot component with two distinct HHS agencies. The pilot standardized a business process and data collection for light interactions with individuals in a call center or front desk situation. Evaluation of the pilot also was completed and recommendations about next steps are being developed.
- ✓ Formal kick off and implementation of the first phase of the Client Register/Master Client Index Component.

2.6 Planning and Land Use System Modernization

The departments supporting Fairfax County's land planning and development processes initiated a major strategic initiative to improve the speed, consistency, and predictability of the development review processes, and for improved access to data and reporting. 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 project will be a catalyst for enhanced service efficiency. The Planning and Land Use System (PLUS) Modernization initiative and associated projects seek to implement the best fit IT solution to meet the overall objectives for business functionality, customer service, and technology capability needs of County departments involved in the regulatory land use and development processes, and modernize and enhance the County's land use business architecture and its underlying technologies.

This initiative also supports Fairfax First and Economic Success strategies and aligns with the Board of Supervisor Public Engagement and County Web-site redesign goals. Fairfax First, will transform the findings of the strategic assessment into tactical recommendations to improve the speed, consistency, and predictability of Fairfax County's Land Use processes, and serve as the primary business driver of the Land Use System Modernization initiative.

- Executive sponsorship for the initiative and governance for associated projects is 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 Competency Centers DIT, and agency directors of the five major agencies associated with the land use process. This group provides leadership and strategic direction for the project including goals, timeframes, and priorities.
- Key leadership for the business scope and process improvement opportunities and goals is 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.
- The 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 is planned for the first quarter of FY 2022.
- Project completion is anticipated in FY 2023.

The Department of Information Technology provides the technological leadership and works 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, and code compliance processes, and provides contemporary capabilities for Web, mobility, and data analytics.

CURRENT SYSTEMS

Fairfax County's land use agencies rely on the legacy custom developed Land Development System (LDS) and the Fairfax County Inspections Database On-line (FIDO) system (an older generation Commercial-off-the-Shelf (COTS) applications), and an assortment of independent sub-systems and interfaces to support Fairfax County residential and commercial development activities since 1996 and 2003, respectively. These systems are based on old land use services business process models that will be updated as a result of alignment of projects related to Fairfax First, and aligned with new technology solution opportunities in the PLUS. The current systems operate on obsolete technology architectures no longer supported by the COTS vendor, and numerous complimentary systems with custom interfaces had been developed to meet evolving business requirements over the past two decades.

The PLUS project will replace and consolidate these aging systems with a modern technology platform that is driven by re-engineered, streamlined, and integrated business processes across the five major land use stakeholder agencies. This project will work in tandem with the ongoing LDS and DPD Electronic Plan Submission Projects (ePlans) to ultimately deliver seamless technical integration and functional interoperability.

FIDO and LDS systems have been expanded to interface with the new LDS and DPD ePlans systems that provide digital plan submission, review, and approval capabilities for the land development industry. The County will continue with the seamless integration of ePlans capabilities with PLUS as part of the Land Use System Modernization initiative.

LOOKING FORWARD

Although the FIDO and LDS systems have provided a set of technology programs customized for County land use agencies, they are very old, have obsolete technical architectures, and can no longer be modified to holistically accommodate the rapidly increasing changes in land planning and development business processes. All together, these are no longer technologically

sustainable and inhibit efficient implementation of new business models and best practices opportunities. Whereas new technology offers numerous additional capabilities and flexibility for today's required innovations and the ability to meet the County's changing demands.

The PLUS project will replace the old systems with an integrated enterprise platform that will:

- Modernize the land use technology system to enhance customer service and improve operational execution, as identified in the ongoing Land Use and Development Services Strategic Assessment;
- Support a service delivery model focused on customer outcomes and more consistent, transparent service delivery to streamline plan, permit and inspection time frames and outcomes;
- Replace and consolidate the County's aging land use systems with a modern technology platform that meets business and customer needs, is maintainable and robust, and is adaptable to changing business needs.
- Consolidate and provide modern WEB and mobile portals for business and citizen use.

In addition to replacing LDS and FIDO, the new system will also replace over a dozen complementary systems that have been developed over the years to meet business requirements for new capability. An iterative configuration approach phased over two years began in FY 2018 for the core systems transition. IT solutions for this initiative will leverage County platforms, standards, cooperative contracts, and associated applications such as document management, data analytics, GIS, WEB and Mobility capabilities that will be used by staff and the development community.