FY 2018

Annual Technology Report

Cumberland County, NC
IS Technology

Introduction

In fiscal year 2018, we developed a comprehensive 3-year Strategic Plan that mapped out our approach to meet, foresee, and prepare for the challenges of major emerging technology needs and trends facing the County through fiscal year 2020. As we routinely evaluate and adjust our strategic plan, it will be reviewed annually in conjunction with our Annual Technology Report (ATR), which will serve to provide a progress report for the prior year's performance and upcoming year's initiatives.

Information technology capabilities are essential for efficient, productive staff, and to support the County's strategic goals and objectives requiring a focus on technology, business intelligence, process improvements, and enhanced services for Cumberland County citizens. The strategic plan and annual report will continue to guide us as we define, develop and maintain a portfolio of technology solutions that can effectively be supported to not only meet business expectations, but to also ensure continuous improvement, and serve the citizens while remaining fiscally responsible.

To strengthen and support the financial sustainability of the County, a multitude of innovations, initiatives, and projects were planned for consideration or to be implemented during fiscal years 2018 – 2020. The IS Technology Department continued to make excellent progress in alignment with our strategic plan. This report highlights our growth and accomplishments, as well as additional projects that were undertaken through the year.

This ATR will also describe the upcoming technology initiatives and priorities for fiscal year 2019, which will continue to challenge us as even larger projects will be implemented to maintain and improve the quality of services delivered to those we serve. These upcoming initiatives include Central Permits and Planning Software, Tax Administration Software, continued efforts in Laserfiche Document Management expansion, and the advancement of data analytics and performance management through our business intelligence initiatives.

Our technology roadmap is designed to support the goals and objectives of the Cumberland County Strategic Plan with a primary mission of providing quality services to our citizens while being fiscally responsible. We are certainly proud of our accomplishments during the past year and are particularly excited about all the opportunities planned for the year ahead.

It is our privilege to present the FY2018 Cumberland County Annual Technology Report.

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MISSION

Our mission is to provide efficient, accurate, reliable, secure, cost-effective technology for Cumberland County in alignment with Cumberland County's Strategic Plan.

VISION

Our vision is to provide progressive leadership and support for Information Technology to support the County's Vision.

VALUES

SERVING CUMBERLAND COUNTY CITIZENS WITH **PRIDE**

PROFESSIONALISM

Operate in accordance with the highest ethical standards in all relations with citizens, employees, environment, suppliers and community. Maintain a proactive approach to citizen safety and services.

RESPECT

Support the County in its efforts to respond to citizens accurately and quickly, showing respect to all encountered.

INTEGRITY WITH ACCOUNTABILITY

Minimize taxpayer burden with innovative technologies and information systems. Assure the safety of all technology assets.

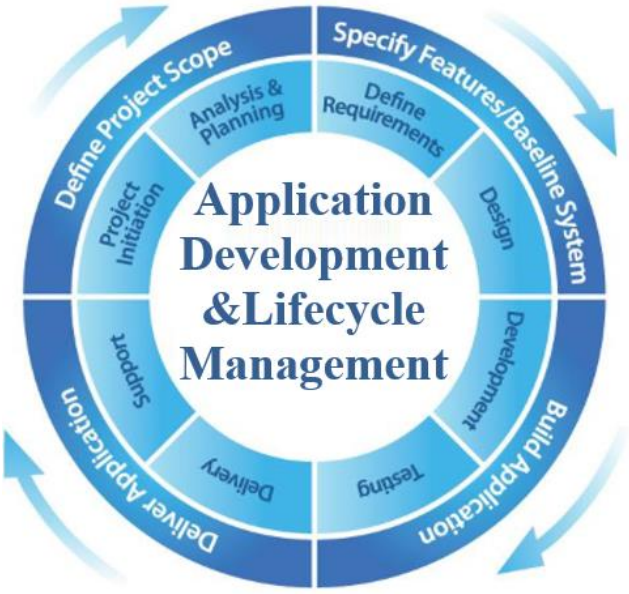
DIVERSITY

Support customer service to our customers, both citizens and employees, recognizing that all people are different.

EXCELLENT CUSTOMER SERVICE

Maintain secure, reliable, efficient, cost-effective information systems, with a focus upon providing excellent customer service to our citizens.

Application Services

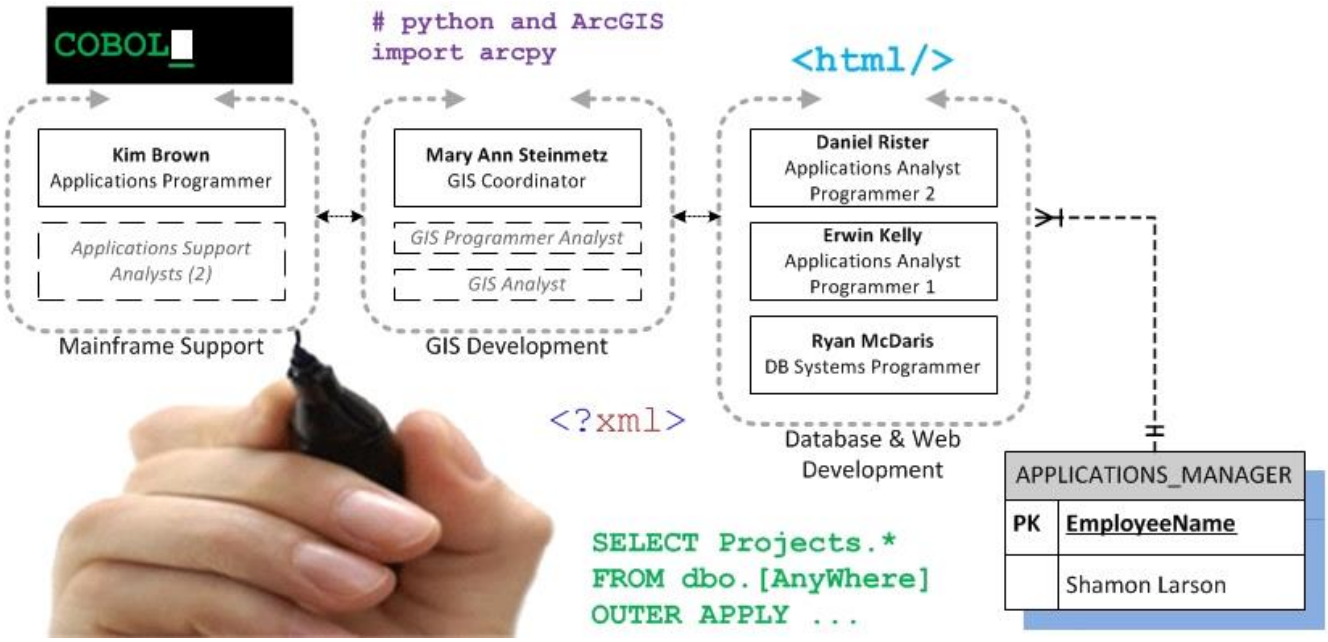


Our Application Services Division is consistently looking to do more with less through innovation, development, and application modernization. To produce efficiencies, we are developing an application modernization strategy in concert with our departments.

A key element in this strategy is application portfolio management (APM). The main purpose of APM is to inventory applications and assess the value of those applications for our County based on a number of criteria including measuring associated risks over the life of the application. This helps us ensure that we are not overly exposed to risk. With that in mind, we will pursue retiring any application that is no longer cost-justified or risk-acceptable.

Another key element is application lifecycle management (ALM), which is the supervision of a software application from its initial planning through retirement and includes tracking application change requests. Applying this process helps us prepare facts and data-driven analysis to make better business decisions over the life of an application in a consistent manner. It will also enable us to prioritize our development and support efforts.

Along this journey, our Geographic Information Services (GIS) staff that provide enterprise-level mapping and analysis services across the County departments will continue to grow and become more integrated into our application ecosystem. This will help inspire better business decisions across the County.



Infrastructure & Technology Support

The Infrastructure and Technology Support team is highly trained with years of experience. We support end-point devices, such as computers, tablets, telephones, and laptops; and design, configure, monitor, and maintain all back-end equipment, including security and telephony devices - wired or wireless. We also prepare, implement, and document disaster recovery solutions.

Besides regular equipment replacements and upgrades, the infrastructure team is heavily involved in the majority of technology projects. We are constantly looking for ways to reduce costs, improve reliability, and increase life cycles. This can be done through design efforts, procurement methods, or by choosing the right technology for the needed solution.

The desktop support team evaluates new hardware for replacement on an approved purchase list for new systems. They are also responsible for making sure these desktops are reliable and meet the standards of software county-wide.

The network infrastructure and telecommunications teams maintain the VoIP telephone system that leverages the computer network and manages cybersecurity threats. The ever-changing information security landscape proliferated by viruses, ransomware, denial of service attacks, and other cyber attacks, requires constant monitoring, mediation, and administration.

The server team leverages high-quality server and storage systems, which can be optimized near real-time. This improves performance and reduces downtime due to upgrades.

Enterprise Solutions

The Enterprise Solutions Division encompasses three primary focus areas: Business Intelligence, ERP Systems Support, and IT Policy management. The primary goal of this division is to support the mission of the IS Technology Department to increase efficiencies and enhance services to the County.

ERP Systems Support

This area focuses on enterprise-wide solutions to include our current Enterprise Resource Planning (ERP) and Enterprise Content Management (ECM) systems. Our team of four ERP Systems Specialists serves many significant roles such as system administrators, subject matter experts, vendor liaisons, and primary help desk technicians around issues that arise in the ERP applications. They also provide key input into needed solutions, assist in critical annual processes, and perform routine updates and version upgrades to the ERP and ECM systems.

Business Intelligence Unit

Our Business Intelligence (BI) unit leads BI initiatives through comprehensive business process reviews (BPRs), which follow an established structured process that leverages a combination of approaches to ensure the most optimal elicitation, analysis, and assessment of department operations and business processes. These initiatives result in a compilation of recommendations that drive continuous improvement and enterprise development. This team serves a functional role of liaison between IS Technology and other departments to establish and maintain critical partnerships that support and encourage collaborative efforts. Our proactive, holistic approach incorporates business process management (BPM) best practices, which cultivate organizational development, maximize operational efficiencies, and eliminate wastes of time and resources. These practices ultimately provide cost savings for the County, an improved work environment, and better services for our citizens.

IT Policy

All IT policies are currently being reviewed and updated to reflect the technology modernization efforts that have been implemented by the County IS Technology Department.

Kim Honan, PMP
IS Enterprise Solutions Manager

Business Intelligence		ERP Systems Support
IS Business Analysts • Sabrina Patterson • Lynn Smith • Vacant	**IS BI Data Analyst** • Al Florez	**IS ERP Systems Specialists** • Sarah Lieber • Steve Jelinek • Josh Savarese • Kyle Wilson

Highlights & Accomplishments

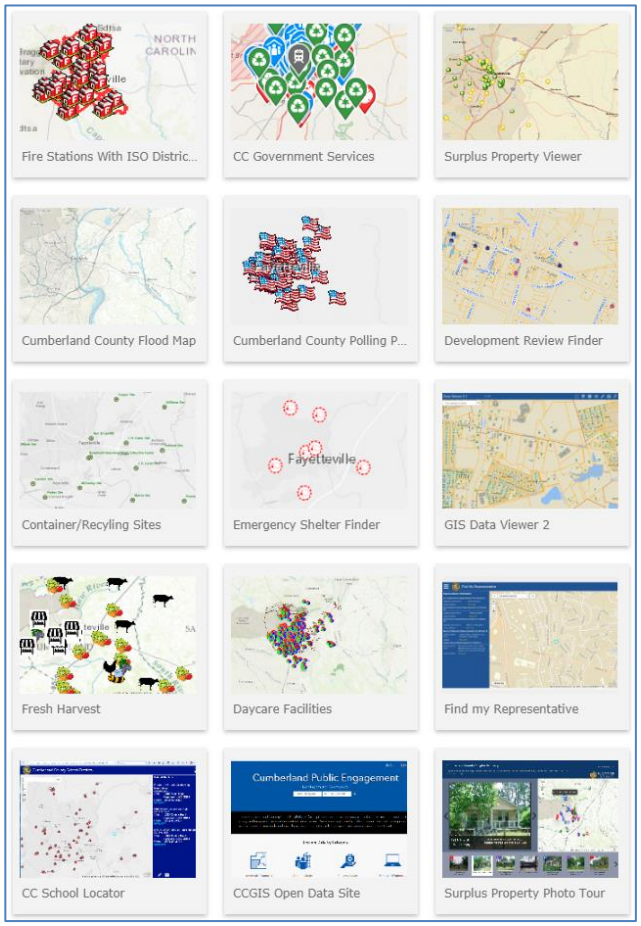
1 GIS – Geographic Information Systems

A geographic information system is designed to capture, store, manipulate, analyze, manage, and present all types of mapping or geographical data. Using GIS allows us to visualize, question, analyze, and interpret geographic data to better understand relationships, patterns, and trends within the County.

1.1 Expanded use of ArcGIS Online

An example of this is the addition of routing services to the Government Services app. We also upgraded many of these applications. We now have GIS Data Viewer 2 which combines the best of Tax Parcel Viewer and the previous GIS Data Viewer into one single application. Here are a few of the new features:

- **Design:** A newly designed interface featuring an IntelliSense search textbox, responsive design for use in mobile devices, and various browsers.
- **Apps:** We added the Development Review Finder and the Emergency Shelter Finder, updated the Government Services app, and added several new layers to the GIS Data Viewer 2 to include the 2017 NC Imagery.
- **Tools:** A new "Search" tool allows users to view information about properties by using line, rectangle, or polygon shapes to select properties on the data viewer. A new "Find" tool allows users to search for properties by street or subdivision. New 500- and 1000-foot buffer tools allow users to see a list of all properties within the buffer and export the list to a CSV file.
- **Data Download & Analysis:** You can now see the mapping data in tabular view on the screen, and then export that data as a CSV file for easy import into any spreadsheet program for additional analysis.



1.2 GIS Open Data Website

We continue to expand our GIS Open Data Website (http://opendata.co.cumberland.nc.us/) that allows the public to dynamically download various GIS datasets (e.g. tax parcels, zoning, city limit boundaries, etc.) using multiple formats to include shapefiles, KML, and GeoJSON. We added several maps from the Planning & Inspection Department: Development Reviews, the Land Use Plan for 2030, Area Land Use Plan Boundaries, and Subdivisions. We also added a data file for 2017 Tax Land Use Codes to provide a description of the related codes found in the GIS Data Viewer 2.

1.3 Expanding GIS Reach and Software Conversion

In the past, several GIS technology administration and GIS data management responsibilities were split between the Planning & Inspections Department and the Information Services Technology Department. These responsibilities were also split between two different mapping software platforms (Pitney Bowes' MapInfo and ESRI's ArcGIS). Today, that oversight resides within the GIS division of our department, and we are on one single mapping software platform. This was a rigorous and complex endeavor that lasted nearly a year and a half. It will pay dividends in terms of improved performance and communication between the two departments and the related processes and technology systems. It will also ultimately improve customer service to the citizens of Cumberland County.

Numerous GIS improvements have been implemented. We converted GIS data sets and functions that were built using the MapInfo product to use the ArcGIS product. We now provide a tool that helps the Sheriff's Office maintain their Sex Offender Registry, as well as verify if a sex offender is living outside of the required buffered area of a daycare facility. We provide a bus route application for the Planning Transportation Coordinator. Online maps that were previously only available on CCMaps.org were migrated and are now included on our Open Data site or as layers within the GIS Data Viewer, which includes: the School Districts, Board of Elections data lookup, Airport Impact Zones, Zip Code Boundaries, Subdivisions, and Building Footprints. Our GIS division is also now more tightly aligned with maintaining e-911 functions that include: Addressing, Street Centerlines, and the Master Street Addressing Guide (MSAG). This allows for a streamlined and more efficient approach to understanding and responding to the GIS needs across all County departments.

2 Cumberland County Website Redesign & Development

The purpose of the website redesign was to meet the goals enumerated in the County strategic plan; namely, to enhance communication systems, optimize service delivery and encourage citizen engagement. To do this, the Website Content Steering Committee developed a list of achievable high-level goals to include creating a responsive website that was searchable and more engaging. By using online surveys, we were able to confirm this list of goals with the needs and requirements of County management, department heads, employees, and the public. We also developed a Web Content Style Guide to be used by content contributors, the PIO Office, and the IS Technology Department to deliver consistent services and provide website quality control measures.

We also introduced new software for enterprise-wide website content management to improve workflow management and provide our departments with a greater stake in the success of their website.

A department's website is only as good as the content that is curated and maintained by that department. We can now provide seamless workflow approvals by routing update requests from the content contributor to the PIO Office through one visual interface that does not require the departments' content contributors to have specialized programming or design expertise. This will improve transparency and accountability in the process and encourage staff to deliver fresh and current content across the website regularly and more consistently.

3 Database Reporting & Conversions

Often overlooked is the time and diligent effort required to produce accurate reports and to maintain and verify data integrity during massive data conversions or imports. This data is often the backbone of the County's major business systems, so much care and precision is taken to ensure its reliability. We also make every effort to provide departments with business intelligence at their fingertips by means of dynamic self-service capabilities. The following projects represent some of the major reports or conversions that our staff completed in the past year using SQL Server's Integration Services and Reporting Services and/or Excel's Pivot Tables.

- HR Employee Turnover Analysis & Reporting
- Finance Ad-hoc reporting
- Public Records Requests
- Mapping Planning Data from legacy system (Mainframe) to modern system (SQL Server)
- Mapping Tax Data from legacy system (Mainframe) to modern system (SQL Server)

4 Application Server Migrations

Each year, we review our application server environment, plan upgrades, and re-architect our systems so that we can properly handle the increased performance needs that stem from the County's business initiatives. This past year we upgraded our SQL Servers to the latest version, as well as our ESRI (ArcGIS) servers. We also added new capabilities to our document management environment by adding Laserfiche Quick Fields and redesigning where the Laserfiche services would reside. By keeping our systems up-to-date on a periodic basis, we prevent costly repairs, thereby saving money for the County and reducing its liabilities. This also increases County workforce productivity since employees can use the latest software enhancements and improvements that the market offers.

5 Application Development

Our department has a long history of developing long-term in-house applications to meet department or enterprise needs, and then providing the main support for those applications. We also offer custom integrations, which are a blend of off-the-shelf software and custom in-house modules or automations to quickly meet the needs of the department. This past fiscal year was no exception.

5.1 Pre-Trial Software Replacement

Last year, Pre-trial proposed a budget reduction scenario that could replace their current software package (SCOTIA) with a County-developed software program. This would represent an annual cost savings of $10,800.

After reviewing their software, our department agreed to take on this challenging assignment. We recently delivered to them a working prototype. A few reports will need to be created and user acceptance testing is underway.

5.2 Animal Control – Volunteer Activity Tracking

During a business process review, it was discovered that Animal Control could benefit from a Volunteer Activity Tracking system. The Business Analyst (BA) assigned to this review gathered the business requirements and provided those to the application development staff for further review to develop the system requirements. This system was delivered through the Cumberland County Intranet to reduce application management overhead and provide users with a familiar interface. An administration page was also developed for key members of the Animal Control department, so volunteers could be added and tracked.

5.3 Print Shop Collaborations & Automation

Our application development team will continue to work with the Print Shop staff to eliminate the manual labor that is inherent in putting together documents for mass printing by automating the steps involved. This past fiscal year included:

- Jury – Updates to Summons and Jury List Automations
- Board of Elections – Voter Registration Cards
- Tax Administration – Property Record Cards, Business Property Valuation Records
- Animal Control – Civil Citations and Pet License Renewals

6 Infrastructure & Technology Upgrades

6.1 Network Upgrades

Network equipment is vital to the operations of Cumberland County IS Technology. To ensure the highest quality of service is maintained with the least amount of downtime, we replace all critical equipment as it runs end of life. For less critical access switches, we maintain warranty for as long as possible, but to save money, we hold those switches a little past their warranty and keep a few spares on hand to replace if needed.

6.2 Disaster Recovery (DR) / Business Continuity (BC) Upgrades

Cumberland County maintains on-premise DR/BC systems. By having this infrastructure on-premise at a secondary location, we are able to continue operations without relying on the internet. In FY2018 we replaced servers, switches, and storage systems at our backup/recovery site.

6.3 Mobility

We expanded application accessibility for smartphones and have worked with County volunteer fire departments to replace aging laptops with iPads. We added a mobile application called Freedom to our dispatch system to allow for easier viewing of 911 calls and better incident mapping by firefighters. This new application has a site licensing model which will allow us to expand the use of our dispatch solutions. It will also greatly assist with our initiative to expand closest unit response.

6.4 Voice Over IP Telephony

The County finalized the installation of our Cisco VoIP Unified Communications phone system in the summer of 2016. This system allows computers and phones to use the same infrastructure. In FY2018, a new posture assessment appliance was purchased and installed, which restricts access to the network based on identity or security posture of the device or user. It also forces user or machine authentication prior to granting access to the network and will quarantine a device due to any problems that are detected. This ensures devices and users are safe prior to accessing county resources remotely. We also replaced and/or upgraded several firewalls within the county due to reaching end of support.

6.5 Digital Signage and Interactive Displays

To keep citizens informed of County news and services, we added digital signage at several locations. We installed these units in strategic locations within the County courthouse, Health Department, and WorkFirst Career Center facilities. The public can now be more informed of County services while conducting business or waiting on appointments. We also installed interactive displays in several departments, which are used for training purposes. Four were installed at our WorkForce Development Career center. This solution gives students the capability to practice with modern presentation tools and give first class demonstrations.

7 Enterprise Resource Planning

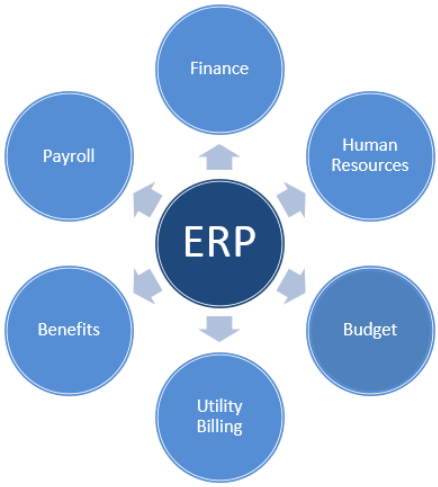
We continue to leverage Enterprise Resource Planning (ERP) solutions to eliminate or replace silos of similar systems.

7.1 Tyler Munis ERP system

Tyler Munis is our integrated ERP solution that manages core business processes for Finance, Human Resources, Budget, Utility Billing, Benefits, and Payroll.

7.1.1 Tyler Munis 11.3 Upgrade and Maintenance

Perpetual upgrades are released annually by Tyler as part of their standard maintenance agreement. We have adopted ERP upgrade implementation and maintenance plans that follow best practices and ensure our systems are operating at optimal levels. New releases are deployed the first quarter of every calendar year. Version 11.3 was implemented in February 2018. Munis service packs have replaced the previous Munis Internet Updates (MIUs) and are tested and implemented monthly.



7.1.2 Employee Self Service Improvements

The Employee Self Service (ESS) feature was implemented in FY2017 to allow employees to access pay stubs, W2s, and other important information online. We continually explore options to enhance services for our employees through this resource. In FY2018, we added the following:

- Ability to enroll in and track attended classes conducted by Human Resources
- Ability to select electronic delivery options for W-2 and 1095 forms
- Open Enrollment and Tax Form Delivery Options documentation in the Resources section
- New feature that enforces reading and acknowledgment of mandatory documents

7.1.3 Public Utilities Implementation (Go-Live)

In February 2018, the Tyler Munis Utility Billing Module was implemented to streamline Public Utilities' billing and payment processes, and provide enhanced reporting for monitoring, tracking, and analysis. Public Utilities staff can view customer billing and usage information from a mobile device, which will enable them to better serve their customers. Citizens also now have the benefit of Citizen Self Service, which allows them to receive their bills and notifications via email and view and pay their bills online.

7.2 Selection of New Tax Administration Solution

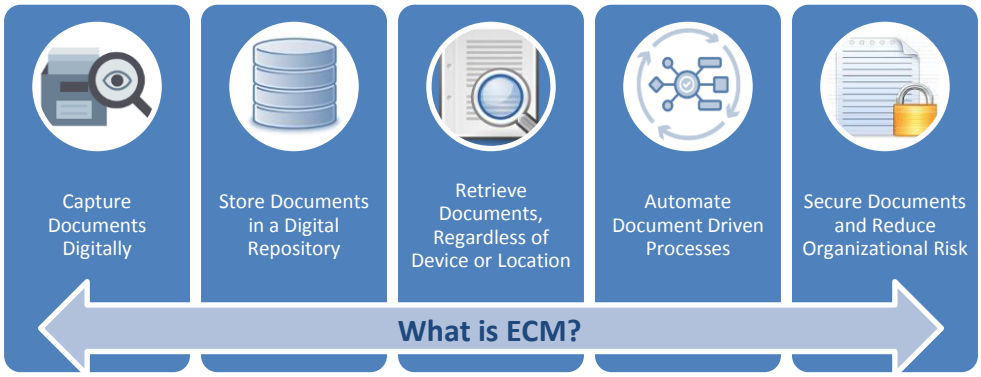
A business process review for Tax Administration was conducted as a proactive effort to obtain a thorough understanding of their processes prior to a needs assessment performed by a consultant. The consultant was contracted to assist with the selection and procurement of a new Tax Administration solution. Throughout FY2018, the Business Analyst played a key role in assisting the consultant, IS Project Manager, project team, and subject matter experts with the needs assessment and selection processes. As a result of the collaborative efforts of the IS Technology and Tax Administration departments, the North Carolina Property Tax System (NCPTS) provided by Farragut Systems, Inc. was selected as the new Tax Administration solution. Implementation will begin in FY2019.

8 Business Intelligence

The IS Enterprise Solutions Division leads a variety of business intelligence (BI) initiatives consisting of comprehensive business process reviews (BPRs), resulting in recommendations that will improve operational efficiencies and ultimately reduce costs to the County. Streamlined business processes, process automation, modernized technology, and proper resource allocation optimizes operations, minimizes wastes in time and resources, appropriately distributes the workload, and most often reduces the need for additional staff. Time savings provides labor hours that can be used for additional work at no additional cost to the County. Reductions in process steps, redundancies, silos, and hand-offs greatly increase productivity, while creating a more positive and effective work environment. This combination is conducive to employee morale, retention, and professional development. It also ensures a successful, efficient department, which significantly benefits our citizens, as well as our employees.

8.1 Digital Transformation

Laserfiche is the County's enterprise content management (ECM) system and is considered during all BI initiatives as a solution for repository and business process automation needs. These BI initiatives are also driving digital transformation projects such as the ones listed below.



8.1.1 Annual Laserfiche Day

On November 9, 2017, we held our first Annual Laserfiche Day to introduce the County's enterprise content management system to departments and share what Laserfiche can do for their digital transformation and business process management endeavors. We had an impressive turnout and the event was a great success. As a result of Laserfiche Day and other efforts, the interest in Laserfiche has continually grown and we have received many help desk requests for new Laserfiche initiatives. We expect this to continue until all County departments have implemented Laserfiche. Our next Laserfiche Day is planned for October 2018.

8.1.2 PIO Public Records Request

Due to the continual increase in demand for public records, the Public Information Office requested a solution for submitting and tracking public records requests, to include a form on the County website. After reviewing this process, the need was discovered for other departments as well, to standardize the public records request process and allow us to track and monitor requests to ensure they are completed. It was decided to create a Laserfiche form that will be available online. This will streamline and digitize the process, while meeting our statutory response to public records requests. The solution is expected to be completed and implemented in FY2019.

8.1.3 Human Resources Digitization Project

A personnel file digitization project, which began in FY2017, continued in FY2018 with custom forms and process automation to include the following:

- A structured, secure repository for HR to begin back scanning personnel files.
- A Laserfiche form for departments to securely upload supporting documentation for personnel actions using workflow to streamline the process, route appropriately, and enforce confidentiality.
- A Laserfiche form and process for HR's new Employee Recognition program, which allows supervisors to nominate employees for special recognition.
- A personnel file process to allow County employees and HR personnel to electronically check out personnel files through a custom Laserfiche form. This prevents the loss or misplacement of employee files and ensures confidentiality by minimizing the removal of personnel files from file cabinets.

8.1.4 Emergency Services – Laserfiche DMS for Training and Policy Updates

The Emergency Services Department needed a robust document management system (DMS) to allow them to achieve consistency and governance in the areas of policy and training management. They reported that policy updates were slow and training records were in hard copy, which was inefficient in the assessment and placement of staff. These constraints caused inconsistencies in operations, as well as frustrations from staff and supervisors. A DMS solution planned for FY2019 will provide a centralized location for policy and training records and new functionalities to allow them to easily review, update, disseminate, and verify receipt of documents through streamlined processes and automated workflow.

8.1.5 Child Support Enforcement File Digitization Project – Phase II

Phase II of the multi-year Child Support Enforcement File Digitization Project began in FY2017 with Interstate Establishment, Interstate Enforcement, and regular Enforcement Agent case files. A milestone was reached in FY2018 with the completion of scanning for Interstate Establishment Agent cases. This digitization project streamlines processes, improves customer service and increases operational efficiency. It also meets state and federal regulations that allow electronic storage of documents as official records.

8.1.6 Animal Control – Laserfiche Repositories and Forms

In FY2018 a Laserfiche repository was implemented for Cruelty Officers, which replaces binders maintained for cruelty cases. It also provides electronic access to documentation needed during court. A repository implemented for the Enforcement Supervisor digitizes nuisance cases, bites, potentially dangerous dogs, and other miscellaneous cases. It also provides extensive search capabilities. A Laserfiche form was created to record potentially dangerous dogs. This form is used to collect metadata for the documents, so information is entered only once.

8.1.7 Legal – Case Management Solution

The County Legal Department submitted a request for assistance in creating an Access database that would provide a file and case management system. A business process review determined Laserfiche would provide the best solution for their requirements at minimal cost. The solution will automate processes and workflows and provide file tracking from setup to destruction. This will improve efficacy and efficiency in the Legal Department and will allow them to more easily adhere to document retention requirements. This solution is planned to be implemented in FY2019.

8.1.8 Library Business Process Review

An Initial Project Request (IPR) was submitted through the IS help desk for the implementation of Laserfiche for the Library. The goal was to digitize Human Relations material for online storage and disaster redundancy, to reduce physical storage needs and increase efficiency in finding and accessing data. There was also a concern for potential flooding, which elevated the need for digitization. The primary focus was on employee, recruitment, medical, and archived files. The Business Analyst collected information pertaining to their HR processes, document types, and other information needed for the repository to be set up. Due to the Library being on a separate domain and not supported by County IS, we could assist, but not provide the implementation. However, to minimize costs, we allowed the Library to use our server and licensing directory, so they didn't have to purchase their own, which would have been a much greater expense. Their only costs were the licenses needed and the services provided by our sole source vendor/Value Added Reseller (VAR) of record for Laserfiche to implement the repository.

8.1.9 Work Force Development – Document Management System

The Work Force Development Department requested a document management system to allow them to securely store, manage, search, track, and maintain participant files, which consists of intake eligibility and validation documents, financial documents, training records, enrollment and exit information, activities and correspondence, and assessments and enrollment forms. Requirements include a logical structure for storage, file usage tracking, versioning, and the ability to accommodate a 3-year retention schedule. Documents are currently stored on different network drives dependent on the user, and there are many copies and versions of the same files on various drives. There are also state and contracted employees that do not have access to the County network, preventing them from accessing needed information. Implementing streamlined, automated, and paperless processes will greatly enhance operational efficiencies. A Laserfiche solution is planned to be reviewed by our ERP team next year.

8.2 Work Force Development – Paperless Board Meetings

This BI initiative began with a request for a quote on tablets for the Work Force Development Board to eliminate the printing of meeting agenda packets. A business process review (BPR) was conducted to understand the process and justify the business need. Their goals for the request are to reduce time and costs of preparing material for the meetings, to make the information more accessible, and to be in compliance with the Government Paperwork Elimination Act. Tablets for the Board will be vetted in FY2019 to establish how the devices will be tracked, managed, and maintained. Our recent implementation of NovusAgenda may be a solution for their agenda management needs. Once we begin Board implementations, also in FY2019, this option will be considered.

8.3 Board of Elections Business Process Review

The Board of Elections Department is currently in need of a training method for poll workers to ensure they are learning all required topics, retaining information, provided refresher topics, and notified immediately of last-minute changes and requirements. It was determined that a business process review be conducted to review the poll workers current training methods and identify a learning management system (LMS) that will accommodate their needs. Due to the demand for a solution for multiple departments, we will explore a scalable, enterprise solution.

8.4 Animal Control Business Process Review

A comprehensive business process review was conducted, and many recommended improvements were implemented for the Animal Control Department in FY2017. The remaining recommendations, implemented in FY2018, included the implementation of Laserfiche to provide a secure repository and specialized forms, the installation of cellular bi-directional antennas in the Animal Control building to increase mobile device coverage, and the implementation of mobile software to improve fieldwork capabilities. Safety training was conducted for officers, and Freedom was implemented for Animal Control Officers (ACOs) and the Dispatcher, to enable tracking of officer locations.

8.5 Business Process Reviews for New Land Management Central Permitting System

This BI initiative began to gather requirements for a new solution for the Central Permitting Department with the goal of removing their legacy application from the mainframe system. As the business process review was being conducted, we found there were multiple relationships with other departments that had to be addressed. The initiative ultimately expanded into Planning and Inspections, Land Use, Code Enforcement, Subdivisions, Address Management, GIS, Environmental Health, and Fire Inspections. The results of the review were used by the Business Analyst to create an RFP for the selection of a new all-inclusive system.

8.6 Sign Shop Business Process Review

A separate relationship between Planning and the County Sign Shop was found as a result of the business process review conducted on Address Management. After a brief assessment of the Sign Shop business processes, it was apparent there was a need for a new solution for designing and fabricating street signs. The current system is very outdated and incompatible with new equipment recently purchased for printing the signs. A recommendation was proposed by the Business Analyst to replace their current software with a more modern solution, which will be fully vetted in FY2019.

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8.7 Broadcast Equipment for Commissioners Meeting Room

As the result of a business process review, an RFP process was initiated for a solution to replace the outdated, dysfunctional broadcast and presentation equipment in the Commissioners Meeting and broadcasting rooms. The solution was implemented in FY2018, which included new equipment, improved encoding and streaming services, and training. This eliminated the cost of supporting outdated equipment, as well as the limitations of 30-minute video segments. It also now features multiple video formats, and broadcasting and streaming controls. The back-end system in the broadcast room can be bypassed so presentations can be performed from within the meeting room. New features such as live streaming, archive and search options, and subscribing to the County YouTube channel for updates were also included, providing better publication services for our citizens.

8.8 Commissioner's Agenda Process (NovusAGENDA)

A business process review previously conducted on the Board of Commissioners agenda procedures revealed a need to streamline the process, improve agenda management, identify and address delays, automate and track submittals, and easily publish documentation. Recommendations included a new agenda management software solution to streamline and digitize the agenda and minutes creation processes. The implementation was completed for Commissioners meetings in November, FY2018. The NovusAgenda solution is available on any mobile device from any location. It utilizes automated workflow technology and electronic approval processes to reduce reliance on emails, errors in the submission process, and the lag time in receiving information. It also streamlines the process and allows staff to track the progress of submitted items, increasing transparency. Digitizing the agenda reduces costs, eliminates paper submittals, automates approvals and workflow, and allows Commissioners to easily follow the agenda during meetings.

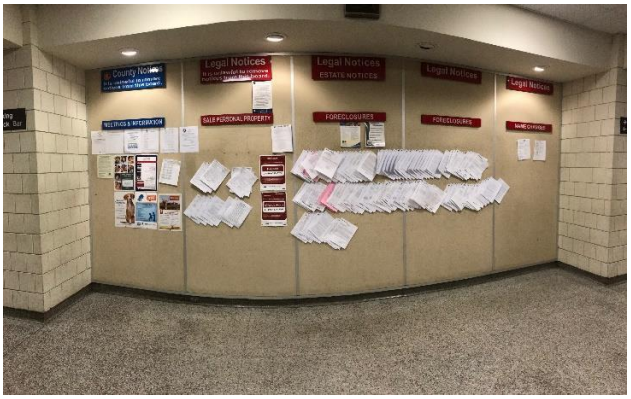
8.9 Solid Waste Business Process Review

The Maintenance Division of Solid Waste is one of the last areas operating on our legacy IBM mainframe. One of the goals of the IS Technology 3-year Strategic Plan is to replace all mainframe applications and siloed systems with a more modern solution. Though this was the initial scope of the initiative, the business process review was expanded to all functional areas of Solid Waste, to include Administration, Landfills, Collections, Household Hazardous Waste, White Goods, Recycling, and Transportation. The elicitation phase of requirements gathering was completed toward the end of FY2018. This large-scale initiative will continue into FY2019 with a multitude of recommendations expected to maximize operational efficiencies, streamline and automate processes, improve utilization of resources, increase tracking, monitoring, and analytics, and ultimately create cost savings for the County. These recommendations will include an enterprise fleet management solution and automatic vehicle location (AVL) system that can be used by all County departments with similar need, as well as layout and operations improvements for the landfill and collection sites. Further recommendations to be proposed are expected to provide additional conveniences that would greatly benefit our citizens.

8.10 County Management Digital Bulletin Board (Courts)

Cumberland County is the host of the North Carolina District 12 Clerk of Court office. The Clerk's office is responsible for maintaining and enforcing the Rules of Practice of the Justice Superior Court of North Carolina. It also serves as the repository for special proceeding filings, including foreclosures, names changes, the sale of personal property, postponements, adoptions, guardianship, incompetency hearings, and motor vehicle liens.

This office has designated a wall in the lower level of the Cumberland County Courthouse as the bulletin board location, which houses all mandated postings for local attorneys. The current bulletin board is visibly dirty, cluttered and unorganized. At the request of County Management, a business process review was performed to identify areas of opportunity and propose recommendations for improvements.



The proposed recommendations include an electronic interactive bulletin board that will address the security of the posted documentation, enforce NC General Statutes, provide a more efficient communication platform, and improve the accessibility of information to the citizens. It will also maximize operational efficiencies and services provided by the Cumberland County bulletin board. This initiative has been placed on hold pending approval of state regulatory changes that will allow us to convert the current paper-driven process to an interactive electronic solution, and will be revisited in FY2019.

8.11 Veterans Services KPI Workshop

Veterans Services was selected as the pilot department for our newly incorporated KPI workshops. This workshop allowed us to test and establish best practices, tools, and techniques to be incorporated into our BI approach. It also provided valuable lessons learned for our processes in preparing for and conducting workshops, and developing dashboards for data visualizations going forward. The KPI workshop conducted for Veterans Services resulted in a collection of metrics that enables us to provide customized dashboards and reports that allow them to derive more value from their data. This greatly enhances their ability to monitor trends and performance to make important data-driven decisions related to operations and resource allocation to determine how to best serve and support our Veterans.

8.12 BI Data Analytics and Tool Selection

Strengthening our BI data analytics was one of the key goals in our IS Technology 3-year Strategic Plan. This will further advance our efforts to drive enterprise development through comprehensive business process reviews. Data analytics and performance metrics provide more extensive baselines, offer insight into day to day operations, enhance projections of upcoming trends, enable future planning and decision-making, and empower departments by putting important data in the hands of the users. In FY2018, a comprehensive vetting process was conducted, and a powerful, innovative BI tool was selected. This tool will allow us to connect to all of our data sources and create extensive, user-friendly dashboards, providing close to real-time information to assist all levels of management in making critical data-driven decisions. Department Heads can visualize customized KPI reports, generate pulse notifications, project and predict using artificial intelligence (AI), get near-real-time data, and analyze trends. Users can drill down, query, and export the data as needed, set thresholds to receive automated notifications and reports, and publish data to the citizens to improve transparency. This BI tool will be implemented the first quarter of FY2019.

8.13 BI Approach Enhancements

Our BI approach is routinely evaluated in alignment with our business process management (BPM) cycle and continuous improvement methodology. Each BI initiative completed provides valuable lessons learned, as well as new opportunities for growth and improvement. Experiences from prior BI initiatives are analyzed and assessed, and our processes are improved based on lessons learned from each scenario.

In FY2018, key performance indicator (KPI) workshops and data visualization were incorporated into our BI approach. The workshops, conducted with subject matter experts (SMEs) and other stakeholders, are used to identify KPIs of value to the department that will provide important measures related to performance, resource utilization, and budget planning. The KPIs are used to design custom dashboards to provide data visualization and deliver almost real-time information for the department head. This increases transparency and assists with performance management, resource allocation, and easy tracking and monitoring of operational trends, which will greatly enhance their ability to make important business and budgetary decisions. KPI dashboards will be vital in the continued implementation of a comprehensive performance management approach as well, which is also in alignment with our business process management cycle to ensure continuous improvement.

In addition to KPI workshops and data visualization, multiple other enhancements to be incorporated include data governance and management, data validation and review, automated data collection and reporting, trends monitoring and notification, metrics and controls, and balanced scorecards. Standardization and best practices will continue to be developed as we establish a roadmap to achieve our ultimate goal of becoming a BI center of excellence by the end of FY2020.

Upcoming Projects & Initiatives

Voice Technology Improvements

With the completion of our Voice Over IP (VoIP) telephony system, we can now utilize Session Initiation Protocol (SIP) trunking. SIP is a signaling protocol used for initiating, maintaining, modifying and terminating real-time sessions that involve video, voice, messaging and other communications applications and services. The redundancy within the technology renders it more reliable than traditional voice trunks.

The County currently utilizes legacy Primary Rate Interface (PRI) telephone circuits for our outside business telephone lines. PRI lines are outdated in that they are physically bound to one location and do not allow for fault tolerance or other redundancies. SIP trunking technology has been around for many years, is not anchored to one location, and allows for redundancies and failover in case of line failures.

Over the past year, the County IS Technology department has eliminated over $100,000 per year in telephone line expenses. By switching over to SIP trunking, we can save an additional $25,000 per year in telephony services.

OpenDNS Cybersecurity System

Cybersecurity will always be a top concern of Cumberland County IS Technology, and we are committed to providing the most secure network feasibly possible. The implementation of an OpenDNS security system will enable the County to better protect our systems against ransomware and malware. As network security devices become more and more reliable against protecting networks from malicious software and hackers, it is becoming more commonplace for hackers to target the end users instead. OpenDNS solutions act as a secure gateway to the internet and provide the first line of defense by inspecting the security of websites before users connect.

Electronic Fax Server

The County currently uses a variety of analog-based fax machines. The VoIP phone system is digital, and fax signals must be translated from analog to digital, then back to analog when it reaches the destination. The County does not always have the option to send required information utilizing other communication methods, because recipients sometimes mandate that we use faxing. The County can realize cost savings by utilizing more modern fax solutions, versus paying for individual B1 analog lines. These modern solutions can streamline the faxing process, since they can be sent and received via email, which can then be received by mobile devices. In addition, this solution will allow the County to retain and archive faxes that also happen to be public record.

Consolidate Data Centers

There are currently four (4) Information Technology (IT) departments throughout the County. Each of these departments spend approximately $50,000 every 5 years for separate disaster recovery solutions. Eliminating three data center sites could save up to $150,000 over a 5-year period. Consolidating data centers will also eliminate redundant equipment and support required to maintain it. We will continue to look at ways to consolidate data centers wherever possible.

Exchange Upgrade

The County currently uses Exchange 2010 to provide email services to our users. Email is one of the most critical systems that the IS Technology department manages. Because of the complexities and dependencies of email, keeping this system updated is crucial. By upgrading to the most recent version of MS Exchange, we can use some of the advanced Exchange features and functionalities, which will help improve email security and mailbox management.

VoIP Multicasting – Music On Hold

Our customer-oriented departments like Health, DSS, and Animal Control, receive many calls per day. They often have to place customers on hold while looking up records or other information being requested. Currently, when placed on hold, there is silence, so customers often hang up. By implementing Music on Hold, these departments should see a decrease in hang-ups, and an increase in efficiency since customers will not be put back into a hold queue. We expect customer satisfaction to improve as well.

Unified Communications Upgrade

The existing Call Center environment is at end of life and will be upgraded to the most current recommended version. Call Center agents will be migrated from the current desktop to a new browser-based software, and the agents and supervisors will be trained prior to the migration. Once this system is upgraded, the departments using call centers will see a reduction in downtime and better collaboration through new features within the new software.

Email Encryption

Email encryption and data loss prevention improve compliance with federal, state, and industry regulations. It allows users to send secure messages to anyone on any device and is required to meet many mandated security standards such, as HIPAA and other privacy acts.

Wi-Fi Expansion

We continue to see a need to expand our Wi-Fi networks in County facilities. Over the next few years, as we implement new tax software, and permits and inspections software, we will have a need to use more mobile solutions, which will require access to the County network via Wi-Fi. Having County Wi-Fi throughout locations that serve users of these systems will ensure the best, most secured wireless service available.

Adoption of Industry Standards

Adoption of industry standards, such as COBIT, ITIL, and ISO/IEC best practices, will ensure effective governance of IT activities and provide a management framework of policies, internal controls, and defined practices. A proactive approach to managing projects, defining IT solutions and services, and reviewing aging assets will provide a level of governance that will ultimately reduce total cost of ownership (TCO) for IT projects and allow us to obtain the status of Center of Excellence in multiple functional areas.

Elimination of IBM Mainframe

The IBM mainframe and related software and backup services will not be eliminated during this fiscal year, but we are anticipating completion by the end of year 2020. This will result in an annual cost savings of over $315,000. It will also increase productivity and system reliability, and will better align our technology with internal and external support staff. This involves several major projects:

GIS & Emergency Services Collaboration

The Emergency Services Dispatch office currently uses the mapping technology within their CAD (computer aided dispatch) system for determining where to route the most appropriate units for 911 calls received. Due to the critical nature of this system, the Emergency Services Dispatch office uses redundant systems in case of potential system downtime. Currently, they use the mainframe-based street maintenance and fire zone applications as the backup for the mapping technology within CAD. Our GIS staff will develop a way to enhance this backup option while moving away from the mainframe as the supporting platform.

New Land Management Central Permitting ERP System

Tyler Energov was selected in FY2018 as the County's new Land Management Central Permitting Solution. This system will streamline workflow and manage core business processes for Planning, Central Permits, Code Enforcement, Inspections, Land Use, Zoning, Comprehensive Planning, Addressing, Environmental Health, and the Fire Marshall's Office. Energov is an all-inclusive modern solution that will provide integration between these related departments to accommodate key dependencies and hand-offs and increase citizen self-service by providing a range of online services.

Implementation of New Tax Administration ERP Solution

The North Carolina Property Tax System (NCPTS), provided by Farragut Systems, Inc., was selected as the County's new Tax Administration ERP solution in FY2018. This solution will replace the existing suite of antiquated mainframe applications with a comprehensive, robust software platform that leverages advanced technologies to support storage, workflow, mobile inspections, data access, and integration. This system will enable the County to centrally receive, process, manage, and report on tax information, including collections, financials, real and personal property assessments and appraisals, mapping/GIS, etc. Implementation is scheduled to begin in early FY2019.

Data Migration and Conversion Prep

Due to the new systems for Planning and Tax, we will need to transfer the legacy data (mainframe) to a modern database (SQL Server) for manipulation and potential data clean up. If data cleanup is needed, this will occur in concert with the responsible data stewards within each respective department. During this past fiscal year, we started mapping the Tax and Planning data from the mainframe to a modern database environment.

In the near future, we will not only re-create the mainframe-based user reports for Tax and Planning, but also the mainframe Tax website. The website is only a small piece of Cumberland County's entire website landscape; nevertheless, it represents our most significantly used website application. It is used by banks in making loan offers; by real estate agents, appraisers, law offices, construction offices, and many more, to conduct their daily business. This data is also important to the County, so making sure it will migrate successfully into any new system is significant.

Mainframe System Upgrades

The County must maintain our current quality of service of our mainframe systems (hardware and software) through the application modernization of the Tax and Planning software, which is projected to be completed in 2020. The following projects are scheduled for the upcoming year.

Mainframe Storage System Replacement

Our current mainframe storage system (or DASD) will be out of service by October 2018. We need to purchase a new storage system with warranty, or renew the maintenance and warranty on the current system. Based on costs and system reliability, it was decided to renew the maintenance on an annual basis until such time that we are no longer using the mainframe as a primary data source.

z/VSE 6.2 Upgrade

Our current operating system for the mainframe (z/VSE 5.2) will go out of service at the end of October 2018. For this reason, we will upgrade to the latest version of this operating system. It also includes VSE Connector enhancements that will improve the integrations being made to ease the transition away from the mainframe and onto modern database systems.

CMF Work Order System – Phase 3

In Spring 2017, we met with CMF to review the deployment of their then-new CMF Work Order System (Phase 2). We also discussed future enhancements that would be slated for Phase 3. We are now ready to start working on this project, which will include an Online Work Order Submission Form, to allow departments to submit their requests from their own computers. It will provide tracking of the request and status notifications, and will include enhancements to the interface to simplify user interactions, reduce confusion, and provide additional reporting and searching capabilities. There will also be improvements to the inventory portion of the system to better track the price changes.

Sobriety Court Database

The Pre-Trial Department submitted a helpdesk request for assistance in building a database to maintain participants who have completed the Sobriety Program. The goal is to provide cost savings related to housing inmates with a pending DWI. Data collected will identify how effective the program is, especially with repeat and low-income area offenders. This will be handled as a change request to an application currently being developed and will allow them to provide an accurate accounting of DWI and repeat offenders. It will also provide those currently in jail with pending DWIs, the opportunity to attend Sobriety Court, which will ultimately reduce costs for inmate housing.

Special Services (Gun Permits) Business Process Review Recommendations

A business process review was requested to evaluate the Special Services Division of the Sheriff's Office. This included the application and issuance process, from receipt of application to issuance or denial of the handgun permit. Recommendations, approval, and implementations are planned for Q1 FY2019.

Business Restructuring and Innovation

We continually assess opportunities for business restructuring and innovation to maximize efficiencies. In FY2019, we will add a new BI Data Analyst position for the next phase of our BI efforts. Due to the consistent growth and requirements of our department, additional positions will be added as well, to include a new Project Manager, Applications Support Specialist, and GIS Analyst. We will also merge the Health Department IT division into the IS Technology department to eliminate duplication of effort, and to create standardization of our information technology platform. This merger will grow our staff from 25 to 32, which is a 28% increase.

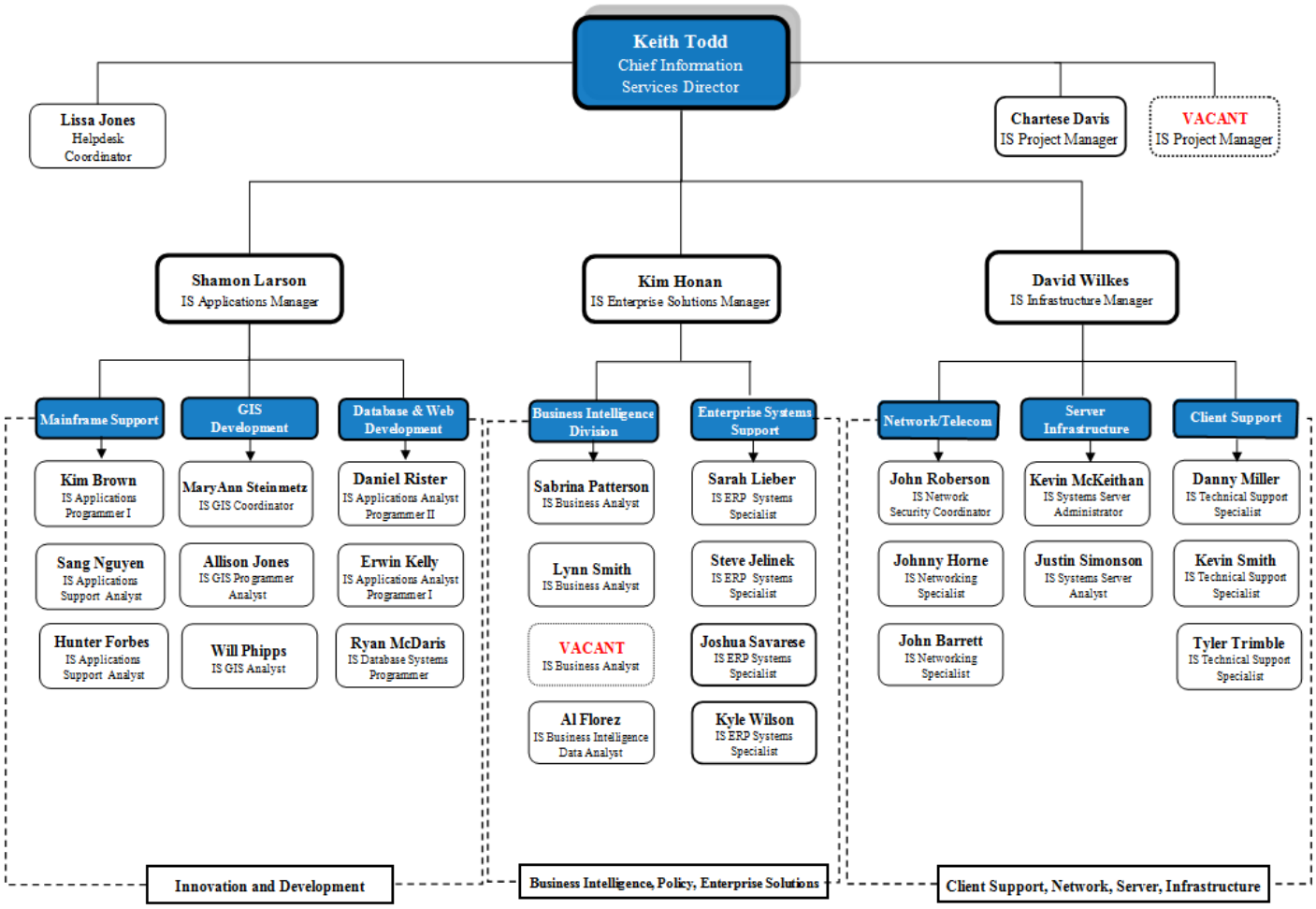
Pre-Defined FY2019 Business Intelligence Initiatives

The table below represents some of our pre-defined FY 2019 BI initiatives. These are not in any particular order of priority and do not include initiatives already in the project implementation phase. Other initial project requests and business process reviews will be selected as deemed appropriate.

#	Initiative / Project	Possible Focus Areas (Partial List)	Planned Initiation
1	Health Department Clinics Business Process Review	Business processes, Electronic Health Records (EHR) system, shadow systems, analytics, reporting.	Q1 FY19
2	IS Technology BI Solution for Data Analytics	Data connections, collection, mining, analytics, dashboards, performance management, scorecards.	Q1 FY19
3	Enterprise Public Records Request Solution (PIO)	Online access, submittal and approval processes, routing, distribution, uploads, publication, reporting.	Q1 FY19
4	IS Technology Laserfiche Repository	Business processes, file structure, naming conventions, workflow, deliverables, storage, retention, user access.	Q1 FY19
5	Emergency Services Solutions for Incidents and Assessment	Incident Management Solution and Damage Assessment Solution: Devices, GIS, alerts, analytics, reporting, etc.	Q1 FY19
6	Solid Waste Comprehensive Business Process Review	Admin., landfills, collections, maintenance, household hazardous waste, white goods, recycling, transportation.	Q1 FY19
7	Board of Elections Learning Management System	Internal, external, and web access, media, graphics, video, customization, scalability, enterprise options.	Q1 FY19
8	Committee Agendas (Finance, Policy, Facilities)	Agenda and minutes creation, electronic access, distribution, publication, automation and digitization.	Q2 FY19
9	EOC – 911 DMS[1] (Training and Policy)	Workflow, automation, records routing, tracking, and retention, user access, storage, versioning.	Q2 FY19
10	Legal Department Case Management Solution	Laserfiche forms, repository, workflow, user access, routing, tracking, client management, reporting.	Q2 FY19
11	BI KPI Dashboards Project (County-wide)	Group sessions, critical success factors, key performance indicators, monitoring, thresholds, alerts.	Q2 FY19
12	Enterprise AVL[2] / GPS[3] / Fleet Management Solution	Vehicle tracking, monitoring, and maintenance, safety, routing, cost savings, analytics, reporting.	Q2 FY19
13	Health Department Laserfiche Implementation	Mandates, regulations, policies, HIPAA, records retention, storage, user access, disposal requirements.	Q3 FY19
14	Digital Bulletin Board: Courts (County Management)	State statutes, attorney and user management, citizen electronic access, document uploads, maintenance.	Q3 FY19
15	DSS Medicaid – Adult and Family & Children's	Business processes, relationships, dependencies, systems, statutes, regulations, policies, HIPAA, analytics.	Q3 FY19
16	Work Force Development Laserfiche Implementation	Policies, procedures, processes, hand-offs, workflow, approvals, user access, integrations, retention.	Q3 FY19
17	Board Agendas (Planning, Health, WFD, etc.)	Agenda and minutes creation, electronic access, distribution, publication, automation, and digitization.	Q4 FY19
18	Enterprise Contract Management Solution	Business processes, inter-department relationships, vendor management, electronic signatures.	Q4 FY19

[1] DMS: Document Management System
[2] AVL: Automatic Vehicle Location
[3] GPS: Global Positioning System

Meet the IS Technology Team



Awards & Accolades

Center for Digital Government Award

The Digital Counties Survey is conducted annually in partnership with the National Association of Counties (NACo) to recognize leading examples of counties using technology to improve services and boost efficiencies. The survey identifies the best technology practices among U.S. counties, including initiatives that save tax dollars through newfound efficiencies, boost transparency, cybersecurity and engagement, or innovate through unique and exciting projects.

In our first attempt in 2016, Cumberland County Information Services was awarded 5th place in the 250,000 – 499,999 Population Category for being one of the most innovative and pioneering counties in the nation. In 2017, we placed 6th in the same category.