

DEPARTMENT OF INFORMATION TECHNOLOGY

I. DEPARTMENT MISSION TO THE COUNTY

To provide leadership to County departments in the management and deployment of Information Technology (IT) and Telecommunications. Services include consulting, analysis, planning, design, project management, implementation, maintenance, as well as, assessing, and monitoring the security risks in the application of technology and communications.

II. MAJOR BUSINESS UNIT FUNCTIONS

A. ADMINISTRATION/CUSTOMER SUPPORT CENTER SERVICES

The Administration Team provides management in accounting, budget, and administrative services with the goal of achieving efficiencies and transparency in daily operations. The primary function of this team is to oversee the purchasing and accounts payable process for all hardware, software, and professional services required to serve our customers.

Customer Support Center: Our Customer Support Center (CSC) is staffed 6:00 AM to 5:00 PM Monday through Friday. The Customer Support Center documents all reported problems and either solves the problem immediately or routes the problem to the appropriate business unit within DoIT for resolution.

BUDGET: \$3,569,580 (spread amongst all units in dept. 0147)
\$ 849,379 (cost transfer to dept. 0060/Telecommunications)
FTE: 12

B. OPERATIONS

The Operations Team manages the Data Center with two full shifts on site Monday through Friday from 06:30 AM to 11:00 PM. Using automation, Operations has been able to go to a "lights out" model on weekends. In addition, Operations utilizes a scheduling system to automate processes for our customers. We hope to expand this model over the next few years. The Operations team will also respond, work overtime, and weekends when required for unexpected events like a disaster or to support critical functions like payroll.

The Data center houses a variety of computer equipment, including but not limited to: IBM Z14 mainframe, AS/400s, RS/6000s, Sun and IBM UNIX servers, Window based servers, Virtual Tape System (VTS) that are connected and mirrored, high-speed laser and MICR printers. Operations is also responsible for the hardware and operating software on these systems and performs the Database Administration duties in support of Oracle, SQL and IDMS data management systems.

Another duty of Operations includes managing offsite storage and Disaster recovery processes. Off-site storage is utilized for customer's critical systems and information to support disaster and business recovery procedures.

BUDGET: \$3,509,250
FTE: 8.23

C. SYSTEMS & PROGRAMMING

Systems and Programming (S&P) team is responsible for maintaining a wide variety of enterprise and departmental applications, in addition to providing business requirements, system analysis, custom development, integration, maintenance, and project management services for many departments.

Our Systems & Programming staff provide these services through formalized Service Level Agreements (SLA) with several Departments. DoIT partners with those SLA customers annually to plan future projects and assist them with preparing the budget needed for their technology spend.

BUDGET: \$5,541,181

FTE: 22.63

D. NETWORK SERVICES

The Network Services Team provides advanced network technologies to design, implement, and support the County's wide array of systems, applications, storage and email services. This is delivered over leading-edge transport technology allowing the County to share data and collaborate, as well as host applications internal and external of the County. DoIT supports an environment with services located on premise and systems we have migrated to the private, government, and County supported Cloud service. This team provides our customers with business and technical consulting services, which includes project management, contract negotiation services, system integration services, enterprise-wide computing and file server availability, full back-up and storage services, and facility planning services.

For the most part this team provides these services through formalized Service Level Agreements (SLA), to help ensure a dedicated, guaranteed level of service.

BUDGET: \$2,133,192

FTE: 9

E. INFORMATION SECURITY

The Information Security program is an area of constant attention for DoIT to ensure we remain aware and adaptable in an ever-changing environment of security threats. The threat to information systems from hackers and malware is constantly changing and evolving at a rapid pace. As the technology leader for Contra Costa County, DoIT recognizes the importance of building a robust and sustainable defensive posture that adapts to the complex Information Security threat landscape. DoIT is focused in the following areas:

- Security Awareness for County Employees
- Cyber Intelligence
- Vulnerability Management for County Systems
- Advanced Endpoint Protection
- Account Management
- Configuration Management
- Data Access Management

BUDGET: \$804,207

FTE: 1

F. TELECOMMUNICATIONS

The Telecommunications team is responsible for County telephone and radio systems. The Telecommunications group provides services for daily additions, moves and changes, as well as project planning and coordination with other department facility moves. The Telecommunications Team partnered with Alameda County to support the East Bay Regional Communications (EBRCS) public communications P25 System. This ensures installation, maintenance, and monitoring of the County's P25 radio systems for Contra Costa Sheriff, Fire, the incorporated cities police and fire, special districts, and medical facilities. As County department communications needs evolve both Telecommunications and Radio-Microwave groups evaluate the newest technologies and equipment providing a leading edge solution to best serve County clients. Other duties include:

- Responsible for the County's communications system:
 - Voice over IP and POTS voice communications
 - County wide Microwave
- Provides support for the 5000 square foot data center, supporting County wide technology to implement and maintain Countywide applications, storage on premise, cloud, and security.
- Administers County's Information Security systems through innovation and best practices.
- Provides reliable, secure high-speed internet, virtual private network, and O365 collaboration systems.

BUDGET: \$11,163,922

FTE: 21

G. WIDE AREA NETWORK

The Wide Area Network (WAN) team ensures reliable, secure, and fast support and maintenance of the County's Wide-Area Network (WAN) infrastructure. The WAN team provides the connectivity between all County facilities for internet, voice over internet protocol (VOIP), County hosted applications, outside agencies including the Department of Justice, Emergency Services for the Sheriff, Police Departments and Contra Costa County Fire Protection District. The WAN staff maintains the County's email, internet access, application system data transport, remote access with two factor authentication, wireless connection, virus detection, SPAM filtering, internet monitoring and security scan.

The WAN Team is funded entirely by customer fees for a monthly, per-unit, connection to the County's Wide Area Network (WAN) Infrastructure.

BUDGET: \$4,305,942

FTE: 5

H. GEOGRAPHIC INFORMATION SYSTEMS

The Geographic Information Systems (GIS) Team is responsible for creating and maintaining maps and overseeing the geographic information strategy for Contra Costa County. This team manages the enterprise GIS data repository and facilitates the sharing and integration of geographically referenced information among multiple agencies and users. The GIS Team also acts as a central resource for all departments to develop centralized applications and information sources, set policy related to GIS, and to ensure

that GIS-related applications work together by developing standards and communicating with department representatives.

The GIS Program is governed by a GIS Policy Committee made up of department heads or their representatives from each stakeholder department. This committee approves the business unit's plans and priorities.

GIS is funded by contributions from each participating department, as well as by a portion from the general fund.

BUDGET: \$930,281
FTE: 5.14

III. DEPARTMENT DATA

BUDGET: \$29,237,354
FTE: 84 Filled: 67 Vacant: 17

CLASS	ALLOCATED POSITIONS
Chief Information Officer (CIO)	1
Assistant Chief Information Officer (CIO)	1
Chief Information Security Officer (CISO)	1
Deputy - Director(s)	3
Executive Secretary	1
Administrative Support / Customer Support	2
Accounting	6
Operations	8
Systems & Programming	22
Network Services	9
WAN	5
Telecommunications / Radio Communications	20
Geographic Information Systems	5

NOTE: (1) Budget Data as of 02/15/2019

IV. DEPARTMENT ACCOMPLISHMENTS

A. ADMINISTRATION SUPPORT/CUSTOMER SUPPORT CENTER SERVICES

Administration Support: Continually negotiating DoIT's hardware/software maintenance contracts and equipment purchases to minimize costs and keep our rates low.

Customer Service: Available from 6:00am until 5:00pm, five days a week. Customer Services (CS) provides first level technical support and services to County departments by managing the Help Desk ticketing system, providing and maintaining all County's wireless access routers, and provide Help Desk support to the County's main application systems such as employee self-service and payroll/benefit password reset.

The CS team administers the Board of Supervisors weekly meetings, online streaming and archival system.

CS continues to enhance the County's mainframe services for DoIT's Systems & Programming by resetting mainframe user accounts, troubleshooting mainframe printing and updating program libraries.

CS technicians have improved their skill sets with current Windows operating systems and core office applications. They have been enabled with administration of our new cloud-based systems and several remote access solutions for end user support.

CS monitors network traffic and activities for the County's internet, WAN, LAN and Wireless networks using a Web-based monitoring system. This system has improved network availability because CS will know, within seconds, of a network outage and can contact the WAN group immediately. It now has trend analysis capabilities, which further advance the trouble shooting procedures.

B. OPERATIONS

- Contra Costa County CalWin Client Correspondence Project from the State of California.
- Process Contra Costa County's welfare recipients for the State.

C. SYSTEMS & PROGRAMMING

General Government

PeopleSoft (HR/Payroll – Countywide)

Stabilization of the County's PeopleSoft Human Capital Management (HCM) system version 9.2. With the upgrade came major program/reports changes and retrofitting. Additional modules in 9.2 were implemented that serve employees more efficiently like BenAdmin/eBenefits, Open Enrollment, Employee/Manager Self Service, and Payroll enhancements.

The purpose of the HCM upgrade was so the County can: (1) remain on a supported version of HCM; (2) reduce existing HCM customizations to the best extent possible; (3) reduce the number of existing reports and queries; (4) perform technical upgrades of remaining customizations; and (5) evaluate and implement new functionality.

MSS/GSS

Employee Self Service (ESS) allows staff to view all paychecks and advices online and mobile platforms. Printing of advices have been eliminated, reducing usage of paper and distribution to each department at all County locations. There were around **10,000** advices printed each month that have been eliminated.

Manager Self Service (MSS) module is utilized by Managers to perform tasks/actions that have been streamlined online, via an approval workflow process.

Third party integrations

Significant progress has been made in the County's ability to integrate with Third Party systems. A few examples include:

- Added employee forms for Oath, Direct deposit, tax withholding (Federal and State), union dues, and Form I-9 via ESS online, to reduce paperwork for employees and departments.
- Completed manual in-house processes of managing FSA/HCSA to a third-party vendor Navia.
- Completed commuter benefits integration with third party vendor Navia. Implemented interfaces to HR and Payroll.
- Completed COBRA benefit management by integrating it with third party vendor Navia. Implementing interfaces to HR and Payroll.

UPK

Completed new training development kit that can be utilized by HR and Payroll functional leads to develop training material using Oracle UPK kit for any product. This is hosted here at DoIT with all infrastructure in place.

Clean Address

Completed and added maintenance mode for Clean Address modules from vendor RunnerEDQ to HR system. This ensures accurate physical addresses and its verification. Knowledge transfer from CherryRoad to County is in progress.

ACA

New ACA vendor support for 2018. Work in progress to support ACA with new vendor selected by HR.

Payroll

Enhanced payroll processes. Added more automation and direct access for reporting.

Departmental Support (Countywide)

The DoIT PeopleSoft group receives requests from each department in the County to make data and reports available to feed into other systems or for audit purposes. Such requests are tracked and approved by HR/Auditors.

Year	Change completed requests
2015	97
2016	84
2017	78
2018	171

CCCERA (Retirement – Countywide)

Interfaces to CCCERA systems have been consolidated and retrofitted to work with the PS 9.2 system. CCCERA support continues both on current PS9.2 system and Subledger. Phasing out of the subledger is in progress, to be completed in early 2019.

NeoGov (Recruitment/Onboarding/Hiring - Countywide)

NeoGov Hire and Recruitment project is kicked and will go through its implementation in 2018. This project will require DoIT resources to help HR move into NeoGov’s expanded services of recruitment and onboarding. The project will also integrate with PeopleSoft 9.2 system. With added modules, County can: (1) replace the County’s current recruiting and

applicant tracking software; (2) reduce paperwork by creating, storing and managing all forms electronically; (3) reduce the redundancy of manually inputting critical new employee information by pre-populating form fields; (4) provide electronic new hire benefit packets to employees; (5) automatically route pertinent documents to payroll, IT, retirement and other applicable areas. (6) provide a seamless process for a candidate from the recruitment phase through the hiring/onboarding process.

Change Request System

The PeopleSoft Change request application was enhanced to meet the requirements for tracking requests including incidents. This application is used by DoIT, PeopleSoft staff, HR and Auditors.

Kronos (Time Entry – Countywide)

DoIT in partnership with the Auditor upgraded the County's old Kronos on-premise system (Version 3.4) to the newest Kronos version 8.1, a cloud hosted system. The purpose of Phase1 was to move to a hosted platform and move out of the expired/non-supported software/hardware.

- The new system went live in November 2018 and is hosted by Kronos. It is used by departments to support the County's payroll system.
- Completed Kronos Historical Database solution to store and archive timekeeping data. This data is not to be transferred into new upgraded system.
- Completed and upgraded RDE replacement (Third Party Software) with CleverAnt software. It is required for each department to enter time sheets rapidly as it is not available in Kronos Delivered software.

Employment & Human Services

Server upgrades/backup

FTP sites/services have been moved to Secure FTP(SFTP) sites. Work in progress on server backup strategies with latest upgrades in storage technology.

Mainframe

Translator index table updated with new aid codes and pin numbers. IPPD added to all mainframe procedures with print steps to extend retention period of reports in case it needs to be reprinted. Documentation created for around 19 daily, monthly, quarterly mainframe procedures.

CalWIN

DoIT is currently working with the customer on their data purification processes. This requires three rounds of processing with the vendor over the next year. More accurate data will result in less work for the caseworkers when CalWin gets into this County. If there are significant errors in the data, cases will not load into the CalWin system. If the case rejects, it is estimated it will take four to five hours to enter it as a new case into CalWin. Eliminating as many data errors as possible will significantly reduce conversion costs. A new Daily Procedure was created to upload the text messaging file from EHSD and send the file to CalWIN. Around 6 new programs and 4 new procedures were created to automate renaming of reports on the days we process more than one file. This process was simplified so new reports won't overwrite old reports created earlier on the same day.

File Transfers

We have converted several processes that created tapes that were mailed to outside agencies to FTP (electronic file transfer). The data coming back from those agencies have also been converted to FTP processes. This has saved time and money both in processing and mailing. We have also incorporated Secure FTP (SFTP) in some systems. One monthly state FTP process that retrieves monthly MEDS files was converted from regular ftp to SFTP.

Websites

DoIT is actively participating in the new CivicPlus Intranet/Internet development and support work in partnership with Communications. GeneralGov maintains and enhances internal websites including DoIT intranet, CBS, White Card, Tel Directory, telecom work order sites.

Law & Justice Information Systems

Criminal

The Law and Justice team continues to receive many requests for enhancements for the both the batch and online Criminal applications. The request can include state and local mandates, improvements to Criminal processing flow and request for additional recording mechanisms to assist with monthly statistics and calendaring.

Electronic Interfacing with the District Attorney's outside vendor application continue to generate change control request when modifications are needed by the Courts or District Attorney. The process that was created, allows the District Attorney to continue filing complaints with the courts electronically, as their prior integrated legacy application allowed them too.

This has been an ongoing change control request as new findings are found by the courts which require a modification to the process because of data inconsistencies which are being transmitted from the District Attorneys Case Management system to the Courts. The reason for this is that the courts continue to identify data which is incorrect or missing from the complaint information being created by the District Attorney Case Management system which is supplied by a private vendor. Because private software vendors have a consortium of customers who use their product, they cannot quickly react to issues which need immediate attention. This is where the S&P Law and Justice team has excelled once again, they continue to enhance/improve the process to edit the data before being allowed into the courts case management system, correcting the data automatically or rejecting the complaint to have the District Attorney office correct and resend from their case management system. Contra Costa County Law and Justice integrated systems currently includes the Courts (Criminal & Traffic), Probation Adult & Juvenile, Public Defender and the District Attorney Juvenile Application.

Traffic

The Law and Justice team of Systems and Programming continue to work closely with the Courts Traffic Fiscal Division. In 2018, the Courts started the migration of their Traffic Application (AMORS) from the mainframe environment to the Thomas Reuters Traffic System application. DoIT's Senior Analyst have been working with the Courts team on this migration. Currently, the Courts plan to Go Live with the Thomas Reuters Traffic System application in June of 2019.

JAWS

Scars/Marks & Tattoos – (SMT): Currently, there is a major enhancement pending in development for the SMT JAWS process. This enhancement will give the agencies the ability to standardize the reporting mechanisms in regard to SMT. The new SMT features have been demonstrated to all of the JAWS user agencies. All JAWS users were strongly supportive of the new SMT process. Currently awaiting final approval to be deployed into production.

Update:

- 2017, awaiting approval to be deployed into the production environment.
- 2018, awaiting approval to be deployed into the production environment from the CAO-LJIS Team.
- 2019 No change, awaiting approval to be deployed into the production environment from the CAO-LJIS Team.

LAND INFORMATION SYSTEMS

LIS Committee (Assessor/Auditor/Tax Collector/DoIT)

Parcel Remapping: The Assessor project to renumber about 4,500 Parcels (books 097) to 091 through 093 was successful. All history will be carried over to the new parcels and old parcels will be retired. Remapping was done due to the rapid growth in population in some areas of Contra Costa County. The Assessor's Office added new regular parcels to existing books to accommodate the current and future growth of new parcels creation. This meant that all downstream systems, including Special Districts had to be tested, checked and monitored to ensure smooth data operations and no impact on them. This includes all the other systems like Delinquent systems (SAM), Secured Systems (PTS), Supplemental (SPT) and Unsecured Systems (BUD).

Assessor

The Assessor's department is constantly adding new features to their LIS, ASR (Supplemental) and Unsecured (BUD) applications through process improvement and automation. These improvements help increase productivity. Below are the many projects which were completed or are on-going by DoIT for the Assessor's office.

.NET Application Deployment: This year we took the most used applications and converted these front-end systems to a .NET environment. DoIT S&P provides support for all desktop and Web applications for the Assessor's Office. One of our goals is to migrate all of their Access Applications to SQL Server DB and .NET Front end. We have successfully migrated most of their back-end data bases to a SQL Server environment. The next step is to convert the front ends to a .NET. This will ensure that their systems will be more secured.

Cost of Ownership (COS) for Assessor with SSRS (SQL Server Reporting services) and Home Owner Exemption Scans systems (HOXScan) were successfully migrated to .NET and various other CRs for Assessors (ASSR-200090, ASSR-200087, ASSR-200083).

Situs Street Directional with N, S, E and W: DoIT partnered with Assessor to reconcile directional street addresses for secured parcels so it could conform to the USPS standard. The project was deployed to production in May 2018.

PDRW Print: We are currently working with the Assessor to identify the requirements for a new, improved and simplified PDRW printing process that will be more accommodating to requirement changes.

Treasurer-Tax Collector (TTC)

The TTC department has many applications/process improvement/maintenance requests that DoIT supports. These improvements/corrections, with the blending of automation has helped them improve productivity, reduce downtime and enhanced operations. Below are the many projects which were completed by DoIT.

TTC Website/Databases: The LIS Team has been the primary support for maintaining and upgrading the TTCs Payment Website for Current and Prior Years secured, unsecured, supplemental, and delinquent taxes. DoIT also provides support and maintains the back-end ORACLE/ACCESS reports and databases for these systems. The TTCs website has been through many major modifications to enhance the tax payer's ease of use experience, and to increase the source of information that does not require a direct contact with the TTC's Office.

The TTCs website has been fully operational for the last thirteen years. Each year, the TTC's team and the LIS Team evaluate processes and methods to increase efficiency and to increase the ease of use for the tax payers. A feature will be added to allow Tax Payers to make a partial payment for unsecured and delinquent taxes.

DoIT rolled out an upgrade for new TTC websites. This required the latest Oracle install, data migration, installation of the application server software, testing and deployment. This was deployed to production summer of 2018.

Application Support: DoIT continues to support various systems for TTC

- E-billing, Supplemental Estimator, Business License, Web Services for Tax Information, and data integration with third party Virtual Billing System (VBS).
- Electronic Deposit Permit application sponsored by the TTC & Auditor-Controller. The EDP application fully automates the deposit permit process for all County departments and outside agencies that use the treasurer and their depositor. Since the upgrade to newer server and software versions, the EDP application's performance increased by over 30%.
- Watts Information Network Application (WIN): The WIN application enables the TTC to launch into the other tax systems from key positions in their online tax systems. DoIT created WIN application cross references that shows the new programs and their relationships. This system has been running smoothly and only one change has been asked for since last year. We are currently working on the initiation of that one new request.
- PTS/SPT/SAM systems: Back office processes are in place to handle all that is needed to support the Tax payment website. We provide data Extracts for the ORACLE database: We regularly provide enhancements to this process as is requested.
- Tax Bills & Printing: We continue to provide support to the redesign and Printing of County tax bills for Secured, Supplemental, Redemption and

Unsecured data with the Advanced Format Printing (AFP). Approximately \$2.2 Billion secured Tax Dollars in Tax bills were printed in 2018.

- DoIT creates and provides Tax bills online. This has significantly helped to reduce misinterpretation of the tax information by the tax payers reducing manual work for TTC's staff.

Auditor-Controller

The Auditor-Control (AC) department has several application/process improvement/maintenance requests for many of the processes we support. These improvements/corrections help to increase productivity with the blending of automation. Below are the many projects which were completed by DoIT for the Auditor-Controller's office:

Web Service: The team has added processes to greatly enhance the user experience for tax rate lookup by property address on the AC website. This was achieved by creating a web service API for Tax rates lookup by address, to be called from the Auditor's internet site through Civic plus.

Mainframe Systems: DoIT continues to provide support for the AC on the mainframe side like the Refunds System, Unsecured and supplemental. We also continue to access, research and provide analysis and program logic for some of AC programs and provide solutions for the various change requests from their department.

Special Projects:

- Public Defender SharePoint: To convert the current PD intranet Site to a SharePoint site. Phase 1 of this project is estimated to be deployed to production by June 2019.
- DCSS – Osler Smith: DoIT provided a complete rewrite of the DCSS Smith Osler Access DB to a .NET/SQL Server. The new system is now in production as of 2018.
- Animal Services: DoIT Automated the file upload process of the ADS to PetData;
- Health Services – Behavioral Unit, Alcohol and Drugs: AODS Beds App, provides access to Behavioral staff and providers' access to input their beds data real time. This has eliminated manual paperwork and processing time for staff. This web application hosted in the cloud was completed and deployed to Azure; currently in production.
- DoIT: All MS Access DB for Assessor jobs used by DoIT Operations were successfully converted from Win 7 to Win 10.
- Z14 Mainframe Deployment: LIS team collaborated with DoIT and County staff for a successful deployment to the new Z14 Mainframe

D. NETWORK SERVICES

The Network Services Team operated with limited resources in an ever-increased demand for IT innovations and cost-effective computing environment by County departments. Our team has consolidated and virtualized departmental enterprise servers, desktops and network storages to achieve cost savings, improve performance, and mitigate risk. We applied new technologies that are consist to industrial standards to maintain interoperability among departments' software, hardware and applications.

Network Services provided network and desktop support to the County's Agriculture, Airport, Animal Services, Assessor, Auditor-Controller, CCTV, Clerk of the Board, County Administrator's Office, County Counsel, Human Resources, LAFCO, Public Works, Risk Management, and Veterans Services departments.

The following projects that Network Services completed for County departments:

- Implemented a new virtual server infrastructure that utilized innovative hardware and ESRI solutions for the new County's Geographic Information System (GIS). Assisted County departments in accessing this new GIS portal.
- Worked with Public Works and vendors in upgrading hardware and application systems for the Countywide Fire Alarms, Secured Building Access, HVAC, Fleet and Fuel management, e-Procurement, and Mobile Citizen.
- Maintained the production of the PeopleSoft HR/Payroll virtualized server environment while it was being upgraded to a new and current version of PeopleSoft HR/Payroll system. Assisted DoIT and vendor staff with network access, desktop support, check printing and network resource allocations. Coordinated with internal DoIT staff during upgrade cut over to isolate data changes on the old production systems.
- Assisted with the new downtown Administration Building design and the Boardrooms IT requirements, datacenter needs, and logistics for the department's floor plans.
- Assisted departments in writing the departmental IT policy, procedures and standardizations.
- Assisted departments in planning for network, server and desktop hardware, network printing management, wireless access, audio/video and conference equipment, and public visiting area layouts during department facility relocation or remodeling.
- Provided IT and multi-media needs for the Board of Supervisors offsite meetings.
- Completed migrating Clerk of the Board document management system to Laserfiche and implemented LaserFiche's Weblink for public access to board records.
- Completed migrating The Maddy Book over to the Granicus Boards and Commissions.
- Upgraded IT equipment and renovated technology to streamline the training process for the Countywide new Budget system training with video recordings and webcasts.
- Took the lead on building the Counties Desktop Alert Server for the pilot program as well as working with the vendor and Risk Management with the implementation of the clients, IT access roles and policies for the application.
- Assisted the County Airport Operations to redesign field camera system based on Bay Area international airport implementations.
- Tested and assisted with implementation of large wireless extenders to provide long range Wi-Fi across airfield camera hubs.
- Installed and maintained multiple MS SQL Database Servers for department application systems. Assisted vendors in upgrade and migration of these application systems as needed.

- Provided remote application solution with Microsoft RDS for County staff to access the department applications while working with mobile devices and traveling outside of the County network.
- Continued the administration for the Countywide MS Active Directory. Recreated and redesigned County department's OU and GPOs up to current standards for Windows 10 and Server 2016.
- Deployed and maintained infrastructure for County departments' mobile devices.
- Continued hardware refresh and desktop computer migrations to current Microsoft Windows 10.
- Continued Windows server migration to virtual environment for better utilization of server resources on high-density servers and hyper-converge frameworks.
- Researched and trained on cloud-based platform that utilize Azure, AWS and open source solutions.
- Assisted DoIT with Sophos Cloud migration, implemented the Sophos County Policies, and trained other departments and IT staff on how to configure the Sophos policies.
- Provided MS System Center administration for the Countywide SCCM 2012 supporting all of DoIT SLA departments.

E. WIDE AREA NETWORK

- Used alternate internet provider (Comcast) to increase the reliability between sites that have numerous users.
- In order to keep up with the growth of internet traffic, DoIT has upgraded our internet bandwidth to 1 Gig.
- Continue upgrading WAN equipment. This includes implementing a new higher capacity firewall to support increased internet access and security requirements. Streamlining the use of WAN equipment, which leads to improved
- WAN reliability and reduces costs. Implemented redundant servers to support core WAN technology to eliminate downtime due to equipment failures.
 - Implemented AT&T Frontline scan to alert County IT of potential problems before it becomes critical.
 - Upgrading from AT&T Opetman to ASE to increase bandwidth from remote sites to core. This leads to higher bandwidth at reduced cost.
 - Converging both voice and data into a higher capacity circuit which leads to substantial cost savings.
- Networked all major County phone locations to provide 24 by 7 remote access and monitoring. This allows DoIT telecom staff to make changes remotely and improves service. Worked with Public Works to network most County facilities to support their security and environmental systems providing secure remote access.
 - Re-designed and upgrade the ACCJIN network with an all Fiber service transport to provide redundancy and reliability between the Sheriff, Warrant System and police agencies. Implemented security changes to keep ACCJIN compliant with CLETS security requirements.

Implemented monitoring of ACCJIN equipment and data circuits to notify the DoIT Help Desk and WAN staff when an outage occurs.

- Installed WiFi access to several County locations. This is an ongoing effort to expand the internal and guest Wi-Fi network coverage within County Buildings.
- Implemented a new high speed and lower cost wireless Animal Services department enforcement vehicle system. This new system is a thin client iPad application access. It provides animal control officers a secure wireless network connection for their mobile data terminal needs. In addition, we completed the fiber optic service upgrade which greatly improved staff computer productivity.

F. INFORMATION SECURITY

Hired a Chief Information Security Officer to create a centrally focused Security Program in DoIT that spans County wide. This was in response to the recommendations made in the 2018 Grand Jury Report.

Implemented detailed logging system for our major computer systems and security appliances. The system has been implemented by integrating Splunk software and our enterprise firewalls and active directory servers.

Certain County departments have requested DoIT monitor their Internet activity. DoIT has provided as a service, detailed internet activity reports to these departments to review.

G. TELECOMMUNICATIONS

The Telecommunications' telephone team during the past year has been moving forward with the networking of the County's telephone communications system. This project has an emphasis on disaster response, E911/A911 service and overall cost reduction.

Voice Conferencing service plus Web Collaboration is now provided via cloud service. This provides greater control to the conference host, web sharing, video interaction and participant polling.

The Telecommunications team is actively rolling out a new voicemail platform with enhanced features and functions. The new voicemail system allows end users the ability to integrate voicemail and email along with advanced iOS Smartphones.

Telecommunications is monitoring the infrastructure evolution that requires short- and long-term implementation of new network equipment and phones.

Future Endeavors

The telephone team will be preparing to implement E911/A911 service, which will transport address and room location of a call to the 911 emergency centers. This service will enable public safety to quickly respond to emergencies at specific identified County facilities.

Telecommunications will continue to evaluate and implement Voice Over Internet Protocol (VOIP) technologies. Currently VoIP Technology installations has taken place at EHSD and HSD sites. Additional sites are being identified at this time for conversion.

Telecommunications has implemented a hosted Call Center (IVR/ACD) service providing greater flexibility to deliver callers to the correct service, in-depth reports, easier script changes, and system redundancy.

The future of Telecommunications is changing every day. The transporting and routing of telephone calls is migrating from a hardware/copper environment to a software/Intranet environment. Radio systems are becoming integrated and support several technologies over the same radio platform. Telecommunications will continue to investigate newer technologies and introduce them as they become viable. If we do not accept these Telecommunications challenge's we will only compound problems and expense in the future. Telecom will be incorporating more fiber optic transport to improve reliability and transport speed.

H. GEOGRAPHIC INFORMATION SYSTEMS

Powerful Analytical Tools

GIS has increased the importance and utility of the geographic component of information that governments routinely collect and maintain. GIS adds a powerful package of tools to an organization's information technology capability because of its ability to integrate and analyze diverse types of information based on physical location or proximity of various features or characteristics. Many of the advantages of GIS are unique to specific applications. However, there are several general advantages that GIS offers public agencies and institutions.

Integration of Different Types of Data Based on Location and Time

GIS provides the capability to bring together different types of information based on their date and proximity and to explore their interaction. For example, GIS can take a civilian complaint about water quality and bring together data from all the different departments that monitor and permit water and ground use (Health Services, Environmental Health, Buildings and Planning). GIS then reveals the history of the water issue to staff by using the data gathered across all departments. This functionality allows staff from all involved departments to cross-reference all information about the issue and plan a solution together.

A Picture is Worth a Thousand Words

The ability of GIS to graphically display (map) data, provide reports (tables, charts, etc.) or create applications for different features or characteristics, relative to their location, is a valuable tool in making an overall assessment of the implications of a specific set of information for public policy decisions or program planning.

Recording Changes and Keeping Maps and Records Current

The active link that GIS allows between databases and maps greatly facilitates the maintenance of mapped information on dynamic features such as property ownership, parcels, address points and streets. For example, using GIS, a County Assessor can, with relative ease, update a property parcel map with new information. That same update is then instantly shared with all staff that are using a web mapping application that contains the aforementioned parcel data.

Enhanced Analytical Capabilities

GIS provides a user with new enhanced analytical capabilities that would be difficult, if not impossible without this technology. For example, with the proper geographically

referenced information, GIS can very quickly determine which emergency unit should respond to an E911 (Emergency 911) call from a specific telephone number and the fastest route to take during rush hour traffic. Then, after these incidents, GIS can then be used create the quickest Emergency responder routes for different times of the day based on historic response times and routes.

Facilitates Sharing of Information among Multiple Users

GIS facilitates the sharing and integration of geographically referenced information among multiple agencies or users. There are many applications that require common types of data (address points, address locators, highways, streams, property parcels, etc.). The coordinated GIS approach we have taken has reduced costs associated with the duplication of data development and maintenance by having one entity responsible (DoIT) for the development of commonly used data*. The most important benefit has been the consolidation of the data to a single dissemination point. This has enabled the same information to be accessed and used by different public entities and agencies that make and implement public policy.

DoIT GIS Accomplishments for 2018:

Departments

During 2018 DoIT GIS spent time working on many projects for all member IT departments to ensure software and support are available for GIS needs. Utilizing the DoIT central GIS repository, GIS was able to grow a new GIS Portal for all County staff. This portal will be further grown in 2019 and be the main conduit for users to access and analyze departmental data. There was a noted increase in projects from Health Services which pushed DoIT GIS to learn new ways of implementing mobile workforce GIS solutions.

Airports

- Continue to update and maintain a custom GIS application that will serve the internal department and public.

Animal Services

- Established a relationship with Animal Services' kennel software vendor (Chameleon) that enables DoIT GIS to copy the Chameleon database to GIS nightly.
- Created new GIS portal for Animal Services that includes analytics and mapping.
- Created a new set of Animal Services Officer beats that allowed staff to streamline reports and assignments.
- Worked with Chameleon vendor to update beats created and address points in Animal Services' kennel system.

Assessor

- Implemented the Sidwell GIS Parcel Maintenance system.

Board of Supervisors

- Created interactive story map for Supervisor Gioia

Department of Conservation and Development

- Performed US Census data creation and correction for DCD.
- Performed on site Employee GIS training for DCD.

Elections

- Connected elections staff to its own GIS database that enabled versioned editing of Elections' data.
- Assisting in modeling and planning of possible precinct edits.

- Planned and outlined new websites and internal reports used during day to day and elections.

Sheriff

- Sheriff migrated their address points to the DoIT master address point file.
- Created crime analysis solutions for Sheriff crime analysts.
- Worked with Sheriff EOC to establish GIS goals and products needed to support EOC.
- Created a mobile solution for evacuation citizens during an event. This system was tested and proved critical during two exercises.

ConFire

- Spatially locating and correcting all Fire Hydrants
- Created a mobile Fire Hydrant maintenance solution for ConFire.

HSD

- Created a total dispatch survey and tracking solution for the 2019 Point in Time homeless study.
- Created reports and analysis products for HSD from envision HIMS data.
- Created all new inspection zones for Environmental Health.
- Created all new inspection zones for Waste.
- Created complex time distance analysis products.

EHSD

- Migrated the EHSD ESRI GIS Infrastructure to DoIT
- Created several web maps and web applications for EHSD internal use.

Public Works

- PW has officially recognized DoIT GIS and expressed their gratitude at the significant progress and ability we have provided.

Major Projects:

- **Address Point Project:** The Contra Costa County address points are in maintenance and are being used by every GIS enabled system.
- **Open Source Database Project** DoIT can now use the Open Source Database PostgreSQL in production and will achieve a cost savings in the next iteration of hardware and software refresh.
- **CCMAP and Employee GIS-CCMAP** continues to be used by the public and we have received positive feedback. Employee GIS was rolled out to the entire County and every user now uses active directly or a unique user name provided by DoIT.
- **GIS Portal-A GIS Portal** has been created that allows all GIS member departments to have their own GIS page with data, apps and analytics.

V. DEPARTMENT WIDE

Internal to DoIT: DoIT has continued to compress the total cost of ownership (TCO) model for the department during fiscal year 2017-18. We continue to move as many employees as possible to tablet and other mobile technologies, allowing them to work “unconnected” in the field. Wireless use has taken a big jump internally in the past year, as we continue to test the potential of this new technology inside the department before rolling more Countywide applications out.

The department continues to implement and strengthen WIFI services in major County offices. We continue to invest in the most current technologies in the areas of email “SPAM” and computer virus fighting and the growing “Ransomware”.

Understanding budgetary limitations are an on-going issue, we have been focusing on upgrading and replenishing our oldest technologies as funding allows, while at the same time working out ways to extend the life of those technologies we will be unable to upgrade for 24 months.

Internal to County Operation: Continue to maintain and enhance the East Bay Regional Communications System (EBRCS) Project 25 (P25) public safety radio system. This has been a two County Radio system project that went live in West Contra Costa County in the last quarter of 2012. The Central and East Contra Costa County went live at the end of 2013. The system is a regional radio system and provides interoperable communications between all agencies within Alameda and Contra Costa County. It also provides a significant coverage footprint for all agencies. Local law enforcement will now be able to use their radios miles beyond their city limits.

Our County Digital Microwave System has been upgraded with new Dual Hot Stand by Radios in a ring configuration, which will improve the reliability of the system, therefore reducing down time.

VI. DEPARTMENT CHALLENGES

A. INTERNAL TO DEPARTMENT AND COUNTY OPERATION

This section has been combined for this year’s report, because the same issues will impact both the internal department and the County in the same fashion, resources and actions outside of our own control.

Because of the nature of the industry DoIT supports (Information Technology), we will always be in some sort of transition. Currently, we have a collection of eclectic County systems we support for our customers, from legacy to cutting edge technology.

The recruitment and retention of qualified information technology staff is an ongoing challenge. DoIT has an excellent working relationship with the County Human Resources department, who work with us to enhance our job specifications and research multiple recruitment avenues. In every IT recruitment, the issue of compensation (below average Bay Area IT wages) Contra Costa County offers to their possible candidates. Unfortunately, many times the candidate does not accept, which usually leads to starting the process over again. In the recent year recruitments, we are seeing little to no candidates applying for the open positions. Within the last 6 months, we have had two failed recruitments for a programming position.

In regard to our legacy applications; Over the last 10 years, when DoIT is hiring for candidates for the mainframe environment which currently house, maintains & supports the Courts (Criminal & Traffic), District Attorney Adult & Juvenile, Probation Adult & Juvenile, Public Defender, JAWS (Justice Automated Warrant System), County Finance System, Assessor, Tax Collector and Auditor

applications. DoIT has taken on the initiative and cost to recruit candidates which have mainframe experience and are willing to be trained in new programming language and database technologies. DoIT has had to recruit retirees who are willing to train our new employees. Core training takes 4 to 6 months. Our goal is that within 7 to 8 months the recruits will be assigned to a system, where they will begin to learn the business rules of the application. The process of learning the system business rules take 18 to 24 months. Like all IT systems, our applications are complex and have many business rules which have been refined over 30+ years. In the end, we hope our candidates stay! Over the last 10 years, we have retained the majority of the candidates we have trained. We offer a family friendly work environment, flex work schedule, telecommuting and a positive & productive work environment.

DoIT will not be able to continue to recruit and train new County IT staff for legacy applications. The process of migrating legacy applications to current IT state of the art systems have had limited success within the County. Unfortunately, many failed due to significant cost to tax payers of our County.

In order for Contra Costa County to begin to move forward with many IT legacy migration initiatives, there will need to be an investment made in Central IT at DoIT. DoIT employs leaders in the areas of Systems & Programming, Geographical Information Systems (GIS), Wide Area Network (WAN), Telecommunications (Phone, Radio and Microwave), Network Services and Help Desk.

There is always the internal opportunity of saving department program dollars versus department operational support dollars. The County must continue to provide necessary services outlined by the Board of Supervisors. However, almost every County department relies heavily on its application of technology. When DoIT has to make staff cuts because of budget cuts dictated by departments, we lose staff resources that may have been learning a County-specific set of tasks for a period of a year or more. Replacing these resources in better budget times will not be a matter of months but years due to training ramp-up. This gap will be filled out of necessity by more expensive contractors who will work as interim staff, then leave the County, taking along with them the institutional knowledge they have gained. The alternative would be to not support such applications and risk operational program failure.

VII. PERFORMANCE INDICATORS

DoIT	FY 14/15	FY 15/16	FY 16/17	FY 17/18
Performance Measures	Actual	Actual	Actual	Actual
Workload Indictors				
Enterprise Server Transactions Monthly	2,003,706	1,567,815	1,550,160	1,506,866
Viruses Stopped	84,900	50,856	25,300	49,600
Spam Emails Stopped	18,195,400	14,691,516	6,100,000	3,300,000
Outcome Indicators				
WAN Availability	99%	98%	99%	99%
Enterprise Server Availability	98.5%	98%	99%	99%