A REPORT BY
THE 2017-2018 CONTRA COSTA COUNTY GRAND JURY
725 Court Street
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Report 1805

Effectiveness of IT Operations
in County Government

APPROVED BY THE GRAND JURY

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JUDGE OF THE SUPERIOR COURT

Contra Costa County Grand Jury Report 1805

Effectiveness of IT Operations in County Government

TO: Contra Costa County Board of Supervisors

SUMMARY

Information Technology (IT) is fundamental to the functioning of Contra Costa County government. Effective implementation of information technology is key to enhancing efficiency, reducing cost, and turning data into useful information to provide better customer experiences for County employees and citizens. IT cost is a significant part of the County budget. In 2016, IT expenditure was estimated by the Grand Jury at over $117 million or approximately 6.4% of the County's annual budget of $1.8 billion.

Information Technology is evolving rapidly. The Grand Jury undertook an investigation to determine whether IT dollars are being spent effectively and whether the County is taking advantage of current best practices and available technology. The Grand Jury found that while IT staff were open, cooperative and focused on doing the best job they can, it concluded that the County IT operation presented opportunities to improve both efficiency and effectiveness.

The Grand Jury found that the IT organization, with a County IT group and individual departmental IT groups, has become too decentralized. Departmental IT groups perform a vital function by supporting their respective business groups' very different business activities. However, decentralization has led to departments duplicating effort to deliver the same services, and for some to lack the necessary resources to create needed technology competencies. The Grand Jury believes selective consolidation will increase productivity and financial savings.

The Board of Supervisors (BOS) hired a new Chief Information Officer (CIO) in March 2018 who will concentrate on County IT organization and strategy. The Grand Jury commends the BOS in its focus on a County-wide strategy. To complement this

process, the Grand Jury recommends a set of strategic options that would: create centers of expertise around key technologies such as security, business process automation, and cloud management to consolidate effort and attract technical talent; standardize or centrally deliver selected common IT services such as email, IT security, and disaster recovery to increase efficiency and reduce costs; and re-create County-wide governance to help set strategy, implement related policies, and monitor strategy outcomes.

METHODOLOGY

The Grand Jury used the following investigative methods:

- Reviewed County websites
- Interviewed County administrators to understand organization and governance
- Surveyed various IT groups
- Interviewed departmental IT staff to understand operations
- Interviewed selected IT customers

BACKGROUND

In Contra Costa County government, Information Technology (IT) is deployed across twenty-three County departments plus the Courts, which is a State-run department. It is organized as a central IT group operating in conjunction with individual departmental IT groups.

The County has a central IT group named Department of Information Technology (DoIT). It is responsible for the central corporate computing complex, and the County's wide-area networking and telephony. It also provides general business and technical consulting services to other departments, if requested and paid for. County-wide software project and service costs are centralized in DoIT and apportioned back to the various departments.

Currently, departments largely retain autonomy over their own IT strategy, procurement, and the IT services and resources that support their programs and operations. Under this decentralized operating model, departments may have their own data and network centers, varying in size and capabilities depending on the degree to which they use DoIT services. Some departments have a large IT staff. The balance employ a small number of IT personnel for local and/or specialized support, and generally rely on DoIT for IT services.

Centralized monitoring capabilities are limited. The Grand Jury discovered that the annual County budget does not provide a detailed account of IT spending. IT costs are

not broken out by individual departmental sections in the overall County budget, and there is no report outlining total IT costs for the County. The Controller's office has not performed a County-wide IT audit in seven years. Committees that prescribed and monitored IT policy County-wide were dissolved after the 2008 recession and have not been reestablished. The County's IT Strategy document was last updated 18 years ago.

The Board of Supervisors (BOS) has limited control over departmental IT:

- The BOS is responsible for adopting the County's budget and retains control of departments' budgets derived from the general fund, including the budget and contracts for IT-related expenditures. With respect to elected officials (Sheriff-Coroner, Auditor-Controller, Clerk-Recorder, Assessor, Treasurer-Tax Collector, and District Attorney), the BOS does not govern the way in which elected officials spend their respective budget allotments or the manner in which the officials assign authorized departmental personnel. The BOS also has limited control over funds derived from grants, given that the terms of the grant generally control the use of grant funds.

- The BOS, through the County Administrator's Office, appoints and manages those department heads who are not elected by the voters.

County IT supports a mix of technologies and equipment, including an aging mainframe, on-premise servers, and remotely hosted software. The County's mainframe system dates from the 1970s. Critical finance, law, and justice software systems running on the mainframe are programmed in an obsolete language which DoIT is having trouble supporting.

Senior County staff reported that obsolescence and inefficiency are driving the need for the following major technology and software-intensive projects:

- Selection of technologies for the new administration building (under construction) and the Sheriff's emergency operations building (nearing completion)

- Replacement of Law and Justice key software systems for District Attorney Adult, Juvenile, and Public Defender

- Replacement of the Finance System

- Replacement of the Tax System

- Replacement of the Time and Attendance System

DISCUSSION

Twenty-three County departments, many with their own IT groups, were reviewed in our investigation to gain a sense of the overall effectiveness of the current organizational structure. Five departments were selected to be studied in more depth.

The County departments span very different activities (for example, healthcare, social services, public works, accounting, and law enforcement). For this reason, IT was diversified under a mixed model with both central and individual departmental IT staffing. This design was meant to provide the flexibility needed to accommodate very different business requirements. Staff indicated that there are advantages and disadvantages. Advantages include flexibility and responsiveness to adapt to the different businesses' unique needs. Disadvantages of decentralization may include fragmentation of resources, duplication of effort, and difficulty in creating coherent strategy. Centralized strategy, governance, and selective centralization of services and resources are typically employed to mitigate these disadvantages, while largely preserving the flexibility and responsiveness of decentralization.

This investigation reviewed the current IT operation to see how well the potential disadvantages are being mitigated. It concentrated on three areas: operation, technology, and project delivery.

IT Operation

Structure

The centralized IT group, DoIT, was formed to provide core IT functions County-wide. It is responsible for communications (telephony, microwave, satellite), the County-wide IT wide area network backbone, and Geographic Information System (GIS) functions. It supports a data center and manages the County mainframe. It undertakes other IT functions for departments on a fee-for-service basis. DoIT is generally well regarded, but many departments do not use its range of services. Reasons cited for this include: DoIT does not operate 24/7 in the needed areas, it does not have the particular expertise requested, or the requesting department does not have the budget. Departments then must manage by themselves or contract outside services. In particular, DoIT acknowledged it does not have the staff to provide security services to individual departments.

Individual departments that the Grand Jury interviewed indicated that having their own IT groups is more flexible and enables them to be more responsive to their business units' specific needs with regards to 24/7 specialized operations, response time, and application domain knowledge. Many also acknowledged that the lack of depth and breadth of knowledge in foundational IT domains (such as networking and security) could leave them exposed. The smaller IT staffs act as application domain specialists and IT generalists. They tend not to have the time or expertise to build the necessary detailed technical/business cases for new technology.

The ability to build knowledge around the different technologies is in turn fragmented, with individual departments duplicating effort in learning the same technology. Critically needed services such as security and disaster recovery are left to the individual departments without coordination. The Grand Jury found that attracting competent staff is a widespread problem due to proximity to Silicon Valley. The County competes with

the Valley's salary structure and the lure of working with the latest technology. However, there is an approach that might make more efficient use of resources and offer more attractive jobs for potential hires. This topic is further explored in the Technology section of the report.

Governance

Governance is the process of establishing policies, and the continuous monitoring of their proper implementation, by the members of the governing body of an organization.

Leading enterprises have a CIO who ensures that IT strategy is aligned with business strategy. A governance body is used to help manage strategy and to create policies and monitor the IT operation to ensure proper implementation and outcomes of the policies. The strategy and related policies together provide guidelines for the organization to ensure coordinated action for maximum benefit.

The County used to have both a CIO involved in County-wide strategy and a governance body. The strategic function of the CIO position has been de-emphasized for some time. The last CIO acted as the operational head of DoIT. Senior County staff reported that he did not have time to concentrate on strategy. The BOS recently moved to correct this. It created two related job positions: (1) a CIO to focus on overall County IT organization and strategy and (2) an Assistant CIO with responsibility for the overall coordination and direction of DoIT departmental activities. The new CIO started April 2018.

The County used to have three centralized committees to provide governance and coordinate IT. According to the County website IT page http://www.co.contra-costa.ca.us/666/Policies-Contracts, accessed 5/3/2018:

- The BOS sets IT policies with input from the County's Information Technology Steering Committee (ITSC), which is the organization's Executive IT Governance Committee. The ITSC is headed by the County Administrator and the CIO. The ITSC created the County's IT strategy document, which is the basis for all IT decisions and priorities brought before and approved by the ITSC.
- The ITSC works with the County's Information Technology Advisory Committee (ITAC), and the Information Security Advisory Committee (ISAC). These committees are made up of representatives from every county department and represent the collective departments' input on technology issues.

This mechanism for County-wide governance was lost over time when key IT positions were eliminated. In May 2010, the Chief Information Security Officer and one of the System Software Architects were laid off. During this time, the ITSC and ISAC were disbanded. Only the ITAC remains today, chiefly to share ideas below the executive level.

The County IT strategy document – which set out goals, guiding principles, and policies – was last updated in 2000, leaving departmental IT groups without strategic direction. Some of the individual departments have created internal governance structures. As a rule: the larger the department, the more structured its governance processes.

The BOS expects the new CIO to bring the County IT strategy up to date and to review and amend the organizational structure as needed.

Finances

Within the county departments, DoIT is the only IT department organized as a separate cost center tracked in the County budget. DoIT charges its costs where appropriate to the individual departments utilizing its services. For all other departments, IT expenditure is not broken out in the overall County budget document. As a result, the County does not track overall IT spending. The Grand Jury came to its estimate for overall County IT spending using data supplied by various county departments. As such, it is the best estimate and may not reflect the total actual expenditures.

The following table shows actual IT spending for the 2016-17 fiscal year for selected departments, based on the overall County budget and self-reporting from the departments:

Table A
2016 -2017 County Budget Expenditures

DEPARTMENT	2016 -2017 IT ACTUALS (000s)	IT SPENDING AS % OF OVERALL DEPARTENT ACTUALS	% OF OVERALL COUNTY IT ACTUALS
DoIT	$12,072	100%	10%
HHS	$57,432	16%	49%
EHSD	$26,742	5%	23%
Public Works	$2,598	3%	2%

Source: Grand Jury survey, departmental self-reporting, Contra Costa budget actuals

IT costs include personnel (salary and benefits), facilities, hardware, software licenses, services and consulting. Actual expenditure in FY2016-17 is estimated to be $117M, or 6.4% of the $1.8B Governmental fund expenditure. This estimate is based on information received from County departments.

Information Technology is a major County cost center, but there is no system in place today to collect, analyze, or report budgeted and actual costs. This lack of information makes it more difficult to inform IT policy makers as to how to allocate scarce resources in a way which would benefit the County overall.

Procurement

Although there is a centralized purchasing function in the Public Works department, other departments maintain their own purchasing units. The Grand Jury found that opportunities exist to improve inter-department coordination of purchasing activities to ensure the best pricing for basic IT goods and services.

The Grand Jury recognizes that each department typically needs some unique and specialized tools and services consistent with its operations. However, more consolidated procurement of the bulk of the remaining standard equipment and services may provide the County (and its individual departments) negotiating power to secure the best competitive pricing available.

In response to a Grand Jury request, County departments provided a detailed list of the orders they placed over the past two years. The Grand Jury focused its review on four of the heaviest users: DoIT, Employment and Human Services Department (EHSD), Health Services Department (HS), and Department of Public Works (PW). Based on submittals received, during the calendar years 2015 through 2017 these departments placed a total of $57.6 million in orders to over 260 vendors in more than 1,200 purchase orders. The total number and value of purchase orders across all departments are significantly higher.

Orders were sorted into categories according to their main purpose:

- Maintenance – orders covering equipment and software service including periodic preventive maintenance and update and any on-call support; training of County staff, cloud storage, and other support services requested

- Hardware – supply of personal computers, server hardware, monitors, printers, scanners, switches, routers, projectors, wireless equipment, cell phones

- Software – all software, specialized and off-the-shelf programs, including periodic updates, license fees, and other support services as requested

- Supplies – includes various expendables, cables, discs, furniture and other small hardware items.

The following table provides a summary of these orders by category for the four major departments:

Table B
Value of Orders Placed
($ Million)

	DoIT	EHSD	HS	PW	TOTAL
Maintenance	$1.49	$1.34	$4.16	$0.02	$7.01
Major Hardware	$4.04	$5.01	$12.31	$1.04	$22.40
Software	$4.04	$3.02	$14.52	$1.65	$23.23
Supplies	$0.76	$0.88	$3.09	$0.18	$4.91
TOTAL	$10.33	$10.25	$34.08	$2.89	$57.55

Source: Based on information submitted by the respective departments; Orders were placed during 2015, 2016, and 2017

More than 40% of all purchase orders ($23.2M of the $57.6M spent) from these departments were awarded to nine vendors (see Table C). This may present an opportunity for consolidating order volume across departments to achieve more competitive pricing and savings.

Table C
Vendors Receiving over $1.5 million in Orders
($ Million)

	DoIT	EHSD	HS	PW	TOTAL
R-Computer	$0.21	$0.77	$3.18	$0.10	$4.26
Omnipro		$2.57	$1.37		$3.94
Groupware Technology			$3.17		$3.17
Dimension Data			$3.13		$3.13
CDW-G	$0.11	$0.56	$1.28		$1.95
ABF Data 5yr. Inc.			$1.93		$1.93
Integrated Archive 5yr. Inc.	$0.38				$1.79
SSP Data	$1.00			$0.17	$1.56
Oracle	$1.18		$0.12		$1.51
TOTAL	$2.88	$5.91	$14.18	$0.27	$23.24

Hardware expenses accounted for 39% ($22.4M of the $57.6M spent) of purchase orders for these four departments in this period, with 78% of the hardware purchased from ten vendors (see Table D). This may present another opportunity to reduce costs by consolidating some of the hardware orders across fewer vendors.

Table D
Major Hardware Provided by Key Vendors
($Million)

VENDORS	HARDWARE					TOTAL BY VENDOR
	Monitor	PC	Printer	Server	Switches	
Sharp Business Systems	$0.01			$0.66		$0.67
CDW-G	$0.04	$0.94	$0.10			$1.08
Computerland of Silicon Valley				$0.30	$0.28	$0.58
Dell	$0.14	$0.37		$0.58	$0.03	$1.12
Integrated Archive Systems, Inc.				$0.35	$1.02	$1.37
ABF Data Sys. Inc.				$1.79		$1.79
Dimension Data				$1.54	$0.67	$2.21
R-COMPUTER	$0.28	$1.94	$0.14	$0.08	$0.02	$2.46
Groupware Technology				$2.45	$0.21	$2.66
Omnipro LLC		$3.72	$0.02			$3.74
TOTAL BY HARDWARE	$0.47	$6.97	$0.26	$7.75	$2.23	$17.68

These tables illustrate opportunities for combining orders by vendor or category among the different departments. While this is just a representative sample, the Grand Jury believes that there are other opportunities to save. For example, a modest target of a 0.5% reduction in pricing with just the nine vendors in Table C amounts to over $1.0 million in savings to the County. If smaller departments with less purchasing volume are included, the County may realize even greater savings.

Technology

Technology can be a powerful driving force for greater efficiency. Employing new technologies typically allows for greater capabilities with less effort. The following technology considerations may provide opportunities for the County to reduce operating costs and complexity, and to streamline its efforts.

Software

The Grand Jury noted that the County is generally moving from home-grown applications to off-the-shelf or customized commercial software whenever possible, to take advantage of economies and new capabilities. Some applications used in the County are now Software-as-a-Service hosted by the software provider, with no County infrastructure required other than bandwidth for internet connection.

Software has a lifespan. Older software is typically less efficient, often poses a security hazard, and is typically more expensive to maintain. Some core County mainframe software, including Finance applications and Law and Justice applications, are written in a language developed about 60 years ago with almost non-existent technical support. Similarly, some older applications on servers and desktop PCs require older and unsupported versions of the operating system, which can no longer receive security updates.

The County is trending in the right direction with its plans to replace its aging mainframe software, adopt cloud applications, and finish its server software upgrades to avoid security issues.

Infrastructure

The County has an extensive hardware infrastructure, consisting of an aging mainframe and over a thousand servers mostly located in data centers. Due to the mainframe and its software's age, it is difficult to find technical support staff for maintenance. The collective operational cost of the servers maintained by the County is substantial. Based on averages from *IBM Systems Magazine* (December 2011), the cost of electricity and cooling alone is roughly $1000/unit/year for the County's servers, or over $1M annually. In addition to the acquisition cost for each server, and its replacement roughly every five years, there is also the cost of monitoring and maintaining it. Redundancy for business continuity adds further costs.

These infrastructure costs can be minimized by virtualizing servers (the ability to make one physical server act like multiple servers), or even eliminated by using cloud services (although other costs come into play). Use of these technologies requires specialized knowledge. DoIT is often consulted regarding virtualization. No IT group has yet built up a cloud architecture knowledge base.

While DoIT provides the wide area network backbone for the County and uses consistent hardware, there is no policy for individual departments' internal network hardware. This creates a multiple vendor network, which is generally considered to be more complex to maintain and upgrade.

Common Services

There are common IT services that are consumed by all departments that would benefit from standardization and consolidation, but are currently implemented and delivered individually by each department. The Grand Jury recommends that the common services of email, disaster recovery, and IT security be considered for centralization to take advantage of economies of scale as well as expertise in these mission-critical functions. These services can then be provided in a standard manner to all departments.

Email

The County is moving to a common email vendor. However, email infrastructure and management are distributed throughout various departments, resulting in duplication of hardware and effort. Calendaring, facility scheduling, and address books are not available across all departments. There are no policies or procedures in place to create a centralized email service for County departments, which has caused problems. Notably, the County's internal open healthcare enrollment period had to be delayed recently due to a County-wide email broadcast that did not reach all County employees

in time. The broadcast email relied on an individual in each department to relay it to their users. One such individual was absent when the broadcast was sent resulting in the message not being relayed. No technical issue caused this.

A centralized service could simplify setup and maintenance and may reduce annual licensing costs.

Disaster Recovery

Redundancy, which provides the ability for businesses to continue operation in the event of failures, is often divided into two components. Business Continuity planning defines systems and procedures to maintain operation in the event of unit failures. Disaster Recovery planning defines systems and procedures to maintain or restore operations to deal with a natural disaster or other event causing massive operating failures.

The Grand Jury's investigation showed that departments are generally following good practice in Business Continuity. They are backing up data at reasonable intervals and storing it remotely. The majority of the County IT infrastructure is in data centers with standby emergency power.

However, Disaster Recovery plans vary and are another area where a common policy and approach might simplify the process and standardize the offering.

The Grand Jury identified the following potential issues:

- Some plans reviewed were in draft form
- Some plans did not include Service Level Agreements (SLAs) that specified recovery time
- Some plans were for data backup only, with no hardware backup
- Most plans were not regularly tested
- Several departments depend in part on DoIT's disaster recovery plan, which is outdated and was last tested in 2005
- Some redundant operations centers are in the same geographic area, although not on the same earthquake fault line
- There is no County policy to simplify and codify implementation of disaster plans

IT Security

IT security is a rapidly evolving field that requires continuous monitoring and update. Cyber threats have been increasing steadily over the last few years, and the nature of the threat changes constantly. A recent example of a security lapse is the ransomware attack on the City of Atlanta on March 22, 2018. This affected multiple city applications

and computers. Citizens were not able to access certain city services, and city workers were prohibited from turning on their city computers and printers for five days. Costs to remediate the attack were estimated at $3.3 million.

The County stores a significant amount of sensitive data on its systems. DoIT is responsible for the security of the County's wide area network infrastructure. County staff reported that DoIT does not have the needed security staff to develop policies for departments to follow, nor to deploy and maintain security for departments. Some departments are not staffed to stay abreast of security technology.

Technology Resource Centers

By *technology resource centers*, the Grand Jury means knowledge repositories with subject-matter experts to support and promulgate technologies, especially new and rapidly evolving technologies. These centers can be centralized or distributed across an organization. DoIT has centralized delivery of certain services: telephony, wide area networking, and mainframe support.

A more decentralized mechanism for consolidating knowledge and making it available for widespread use is to create Centers of Excellence (CoEs), also called competency centers or capability centers. A CoE is a team, shared facility, or entity that provides leadership, best practices, research, support and/or training for a focus area. The CoE team can be centralized or distributed. The key is that the primary goal of this unit is to institutionalize the knowledge, make it available through training, and support its implementation.

Either way, this would avoid the need for multiple departments to go through the process of learning every new technology, or not doing it at all because they do not have time. Opportunities for technology resource centers include:

- Cloud architecture and implementation
- Data management
- Business process automation
- Cybersecurity
- Project management

Project Delivery

Implementing complex software projects is difficult. Recent examples show that the County's project delivery capability can be improved.

Project delivery includes these components: business requirements definition, solution definition, the plan to achieve the solution, the implementation, and the testing. Projects

generate customer satisfaction if they efficiently meet business needs and are delivered on time and within budget. Successful implementation of complex, configurable applications requires combining expertise from business analysts, domain specialists, project management, and vendor(s). Basically, this is done by first generating a comprehensive requirements document that captures and prioritizes the business' needs. Then vendor(s) generate a statement of work to define what work they will do, what work product will result, and what cost and time are required. This is combined with in-house work, and an overall project timeline and budget are developed. Project Management is tasked to keep the project on schedule and budget, and to surface any issues for timely resolution.

The Grand Jury reviewed two IT implementation projects undertaken by County departments: a PeopleSoft upgrade, and a suite of Law & Justice projects. The review was to better understand the County's capabilities in the implementation of large, complex software projects involving significant data management and business process automation.

The Grand Jury identified the following opportunities to enhance the current project management process:

- Strengthening project management capability and authority

- Increasing technology domain knowledge

- Ensuring sufficient stakeholder involvement and support to the project, particularly in requirements definition and the testing/acceptance phase of the project

PeopleSoft Application Upgrade

The Grand Jury reviewed the recent County-wide upgrade of its PeopleSoft human resources application. This was a complex project: a multi-version upgrade of the PeopleSoft software coupled with increased automation capabilities. The software had to be configured to support the County's complicated benefits package rules. The County hired an outside consultant to implement the project.

The original contract was for a fit/gap analysis (that is, an application's appropriateness for a set of business requirements) budgeted at $1.2M. The subsequent implementation contract was for $4.3M dated November 2015, with completion scheduled for January 2017 at a combined total cost of $5.5M. Since then, five contract extensions for additional time and staff augmentation have been signed. As of March 2018, a project slated to cost $5.5M has cost approximately $13.3M, and is still incomplete. The project went live November 2017, nine months late, to accommodate the County's healthcare Open Enrollment. Significant portions of automation have been deferred. The project is ongoing to complete bug fixes, testing, and training.

The project was managed by a project manager from the County working with a project manager from the consultant. Consistent with County practice, the overall direction was provided by a Steering Committee made up of senior administrators and the outside consultant. The Steering Committee met monthly throughout the project to provide oversight and direction of the project.

Interviews with stakeholders and parties involved in the project identified the following concerns and issues. There was limited communication with users on the front end of the project. Once the project began, user input was not solicited and involvement was insufficient. Key staff involved in the project left the County and had to be replaced by consultant's expertise. County staff involved found it difficult to fulfill their day jobs and support ongoing evaluation and customer acceptance simultaneously. End-to-end testing did not begin early enough, nor were the key stakeholder groups sufficiently involved.

Underlying causes for these issues include:

- Complexities were not properly understood

- Stakeholders were not sufficiently engaged

- Project management was not strong enough or did not have the authority to ensure that basic project rules be followed

- Sufficient County user resources were not available for consultation and testing

Law & Justice System Upgrades

Law & Justice (LJ) includes: the District Attorney (DA), the Public Defender, Probation, the Superior Court, the Office of the Sheriff, and all cities' law enforcement agencies. Each entity uses applications specific to its needs, but with significant data transfer between them. LJ is moving core applications from old, mainframe-based applications to new, cloud-based applications. The projects are not yet fully defined, but the budget to implement them is expected to be millions of dollars.

These applications include: the DA's Office Case Management System, Probation Department's Case Management System, and a new Warrant System which serves all departments. County staff reported that some of the existing databases use outdated data schema (structure). Data cleansing and management into new data schemas will require significant effort. As such, implementation of the systems will be done in matched and interlocking phases to minimize translation of data from system to system.

Project preparation has been following generally accepted project management guidelines. IT is working closely with stakeholders to understand business processes, departmental business requirements, and the operations of their current systems. Requirements documents are being created, which form the basis for a Request for Proposal to vendors. Each stakeholder department is providing a project team with a

team leader point-of-contact throughout the project. The department's IT group is acting as project management with their own and consultant domain specialists. The Grand Jury was told of the following concerns:

- Three projects may need to be undertaken concurrently, and there are only four IT staff. The department may not have sufficient domain specialists/project managers to support this number of projects and it is difficult to get ad hoc project support from DoIT without having an ongoing support contract

- There are no data management domain specialists for the IT group to call on for support

- There is little, if any, cloud application knowledge available to draw on, even for standard contract language

FINDINGS

F1. Individual departmental IT groups are useful in supporting the very different businesses of each department, but many find it difficult to stay abreast of all technology areas.

F2. The County does not have sufficient policies to promote coordination and/or centralization in IT strategy, policy, procurement and strategic knowledge concentrations, especially in advanced cost-saving technologies.

F3. The County's IT Strategy document, which sets out goals, guiding principles, and policies, is out of date, having last been updated May 2000.

F4. The County's Information Technology central governance structure has almost completely disappeared. Governance has been left to the individual departments resulting in wide variations as to whether or how it is carried out.

F5. Neither the County nor many individual departments have a consolidated IT budget or track overall IT expenditure, making it difficult to assess.

F6. The County may not be taking full advantage of economies of scale due to the lack of policy coordinating equipment and service procurement among separate departments.

F7. County-wide email and associated calendaring and address book functions are not sufficiently consolidated. Infrastructure and management is distributed throughout the departments. Policy and procedure have hindered efficient communication.

F8. The County is constrained in implementing IT technology advances, in part due to insufficient or lack of access to appropriate skill sets.

F9. DoIT does not have the staff to extend security oversight from County level to the departmental level. Cybersecurity capabilities vary by department.

F10. Disaster recovery plans are in various stages of completion and readiness by department and typically are not tested on a regular basis.

F11. There are insufficient Project Management resources with the expertise and authority to consistently implement the County's critical IT projects on time and within budget.

RECOMMENDATIONS

R1. The BOS should consider directing the CIO to update the County's IT Strategy (last updated in 2000) by December 2018.

R2. The BOS should consider seeking funds prior to the FY2019-2020 budget cycle to expand existing resources into a centralized cybersecurity unit to support and coordinate County-wide IT security activity.

R3. The BOS should consider directing the CIO to re-establish a County-wide governance mechanism by December 2018.

R4. The BOS should consider directing the CIO to investigate policies to standardize procurement, equipment, and IT services prior to the FY2019-2020 budget cycle. Opportunities include departmental networks, and services such as email, IT security, and disaster recovery.

R5. The BOS should consider directing the CIO to centralize the delivery of certain common services in time for the FY2019-2020 budget cycle. Opportunities include email, IT security, and disaster recovery.

R6. The BOS should consider directing the CIO to conduct a review of departments' disaster recovery plans by December 2018 to ensure they are up to date and routinely tested.

R7. The BOS should consider presenting a consolidated IT budget for the entire County down to the department level, as part of the annual budget process, by the FY2019-2020 budget cycle.

R8. The BOS should consider directing the CIO to investigate improving coordination between departments of IT procurement to reduce costs, prior to the FY2019-2020 budget cycle.

R9. The BOS should consider directing the CIO to investigate establishing technology resource centers for dissemination of strategic technology knowledge and support,

in order to create efficiencies and attract and retain staff. Candidate areas include cloud architecture and implementation, data management, business process automation, and cybersecurity.

R10. The BOS should consider directing the CIO to ensure that there is sufficient County IT project management staff with appropriate authority to effectively manage the County's large, complex software projects by December 2018.

REQUIRED RESPONSES

	Findings	**Recommendations**
Contra Costa County Board of Supervisors	F1 to F11	R1 to R10

These responses must be provided in the format and by the date set forth in the cover letter that accompanies this report. An electronic copy of these responses in the form of a Word document should be sent by e-mail to ctadmin@contracosta.courts.ca.gov and a hard (paper) copy should be sent to:

> Civil Grand Jury – Foreperson
> 725 Court Street
> P.O. Box 431
> Martinez, CA 94553-0091