ORANGE COUNTY INFORMATION TECHNOLOGY MANAGEMENT:

GOOD JOB OVERALL; DISASTER RECOVERY MUST BE ADDRESSED

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SUMMARY

The 2013-2014 Orange County Grand Jury studied seven key areas of Information Technology (IT) Management in Orange County government. The Grand Jury found that central IT (known as CEO/IT) and agency/department IT organizations are delivering services that are highly rated by users, and IT costs, organization, and governance are very comparable to other California counties with similar population size.

The Grand Jury is concerned, however, that the County has not demonstrated a current capability to recover critical computing resources in the event of a major disaster. Of particular note is the lack of a backup datacenter for Sheriff's Department functions that are vital to the Department's law enforcement and public protection responsibilities.

The other key areas that currently need attention are as follows:

1. Evaluation of the achievement of business objectives of IT projects
2. Scope and frequency of IT user satisfaction surveys
3. Adoption and use by CEO/IT of Agile methodologies in system development

The Grand Jury also found that the new outsourced services contracts offer a significant opportunity for future cost control and predictability. Under these contracts, increased consolidation and centralization of IT services ought to result in cost savings, but should only be undertaken on a case by case basis after careful analysis and collaboration with affected agencies/departments.

REASON FOR THE STUDY

Information Technology[1] is critically important to the functioning of Orange County government. Virtually all departments in the County are highly dependent on IT to conduct day-to-day operations, as is the case with almost any business or organization today. County spending on IT equipment, services, and related activities is budgeted for Fiscal Year 2013-14 at approximately $180 million.[2] This is 3.4% of the County's overall budgeted expenditures for 2013-14, and 26.6% of the County's budgeted discretionary spending.[3] The County's Internal Audit Department considers IT of such importance and potential risk that IT audits and assessments are among the department's designated core (regular yearly) activities. Also, a

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[1] In this report, Information Technology means the use of computer and telecommunications equipment to store, manipulate, analyze, retrieve, and transmit data and information to conduct County business.
[2] "Countywide IT Spend, FY 2012-13"
[3] "All funds Summary, 2013-14", accessed Jan. 6, 2014, http://ac.ocgov.com/civicax/filebank/blobdload.aspx?BlobID=31274. Discretionary spending does not include earmarked funds such as grants or State programs.

recent study of CEO/IT by the Performance Audit Director was of such importance that it required two years and encompassed five major Tasks and three separate reports.[4]

Recently, County IT operations have been in an especially critical spotlight. One reason is the controversial awarding of major contracts for outsourcing datacenter and network operations in 2013. These contracts are worth a total of $206 million over a five year period. Also in 2013 the County filed a highly publicized lawsuit alleging fraud against a consulting company for failing to deliver a Property Tax Management System that was to have cost over $24 million.[5]

A broad independent study of Information Technology in the County has not been undertaken by the Grand Jury since 2003.[6] Although Internal Audit and the Performance Auditor have done studies since that time, these studies cannot be considered truly independent since both Internal Audit and the Performance Auditor are under the control of the Board of Supervisors. The Grand Jury chose to undertake this study because of

    a. the importance of and dependence of the County on IT,
    b. the significant amount of expenditures directed to IT,
    c. some of the controversial and highly publicized recent issues relating to IT, and
    d. IT has not been studied by the Grand Jury since 2003.

BACKGROUND AND FACTS

Since approximately the time of the Orange County bankruptcy in 1994, Information Technology in the County has been organized and managed under what has been called a "Federated" model. In this model, the Office of Information Technology under the County CEO (CEO/IT) provides services, including shared services such as datacenter hosting and voice and data networks. CEO/IT is headed by the Chief Information Officer (CIO) and provides leadership on strategic IT initiatives. Agencies/departments largely retain autonomy over procuring and managing IT services and resources that support their programs and operations. Under this model, agencies/departments may have their own data and network centers, varying in size and capabilities depending on the degree to which they use CEO/IT services.

Autonomy over IT by agencies/departments is lessened by three factors:

1. The Board of Supervisors retains control of agencies/departments' budgets for non-earmarked funds, including budgets and contracts for IT related expenditures.
2. The Board of Supervisors, through the County CEO, appoints and manages those agency/department heads who are not elected by the voters.

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[4] See http://ocgov.com/gov/opad/reports/ and note Performance Audit of CEO/Office of Information Technology Task I, Task II, & Tasks III-IV
[5] "Quarterly IT Project Status Report, Q1 2012", accessed Jan. 6, 2014, http://ocgov.com/civicax/filebank/blobdload.aspx?BlobID=21147
[6] See "Cost Saving Opportunities for County Information Technology" at http://www.ocgrandjury.org/pdfs/gjcostsave.pdf

3. Agencies/departments participate in and to some extent agree to be governed by decisions of the IT governance bodies noted below.

In the County organizational reporting structure, CEO/IT reports and is responsible to the County CEO, and IT managers report through their agency/department structures and are responsible to their agency/department head. In addition, four governance boards are designated to oversee Information Technology:

1. The **IT Executive Council**, which is advisory to the County Executive Office, and has final review and approval responsibility over IT direction and plans
2. The **Technology Council**, which has technical oversight and is technical advisor to the CIO and IT Executive Council
3. The **Enterprise Architecture Group**, which ensures alignment with the County IT Architecture and sets minimum datacenter standards
4. The **IT Investment Review Board**, which reviews all IT projects and expenditures over $150,000 and is advisory to the IT Executive Council

With the exception of the Enterprise Architecture Group, these bodies consist of a mixture of agency/department staff and CEO/IT staff, and meet regularly. The Enterprise Architecture Group is not currently staffed or holding meetings.

The County has a long history of outsourcing management and delivery of core IT services to outside providers. Core services have at various times included datacenter management, voice and data network management, desktop support, help desk support, application software maintenance, etc. As far back as 1973, when the County outsourced services to Computer Sciences Corporation (CSC) on a seven-year contract, such outsourcing has been the norm, and various other outsource companies have been used.

In 2013, the County approved and completed outsource agreements with Science Applications International Corporation (SAIC) for datacenter and help desk management and desktop support, and with Xerox for voice and data network management. Each agreement is for five years, with two optional one-year extensions. The five year costs of the contracts are approximately $74 million for SAIC and $132 million for Xerox. These agreements replaced an expiring agreement with Xerox for datacenter and network services.

Overall costs for IT in the County were approximately $137 million in FY 2011-12, and $150 million in FY 2012-13, including all agencies, departments, and CEO/IT. For FY 2012-13, the top agencies/departments for IT spending are shown below.[7]

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[7] "Countywide IT Spend" and "Countywide IT Cost" furnished by CEO/IT office

Table 1

HIGHEST IT SPENDING AGENCIES/DEPARTMENTS, 2012-13

	AGENCY	2012-13 IT EXPENDITURES*	% OF TOTAL 2012- 13 IT EXPENDITURES
1)	Social Services Agency	$27,454,082	18.3%
2)	Health Care Agency	$14,664,448	9.8%
3)	Sheriff-Coroner	$13,007,835	8.7%
4)	Probation	$4,671,643	3.1%
5)	CAPS Program (Auditor/Controller)	$4,113,171	2.7%
6)	OC Public Works	$3,151,126	2.1%
7)	Child Support Services	$3,022,124	2.0%
8)	Assessor	$3,005,793	2.0%
9)	District Attorney	$2,906,136	1.9%
10)	Public Defender	$2,390,599	1.6%

* Does not include staffing costs reported in agency/department budgets

In 2009 the Board of Supervisors requested that the Office of the Performance Audit Director audit the efforts and activities of CEO/IT. The audit results were presented in three reports in 2009 and 2010, covering five tasks. The reports included 48 Findings and Recommendations.[8]

In November, 2013 the Board of Supervisors accepted the CEO/IT Audit Follow-up Report from the Performance Auditor, covering all three reports.[9] The follow-up report noted that "Overall, CEO/IT has made significant progress in implementing the audit's recommendations. As of the date of this report, CEO/IT has completed 27 of the 48 recommendations (56%) and plans on completing the remaining 21 recommendations (44%) over the next 6-12 months… The majority of the recommendations that have not yet been implemented are those that will be addressed during and following the transition to the new model" (referring to the Managed Services model).

METHOD OF STUDY

Management, delivery, and use of IT in the County are very broad topics. The number of County departments using IT (virtually all), and the corresponding number of users, application systems, networks, datacenters, etc., is very large. There could be an almost limitless number of

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[8] See http://ocgov.com/gov/opad/reports/
[9] See http://cams.ocgov.com/Web_Publisher_Sam/Agenda11_05_2013_files/images/O00113-001422A.PDF

study topics relating to IT. The Grand Jury chose to examine the following seven high impact and high profile topics:

1. Costs of IT
2. Governance and Oversight of IT Projects
3. Comparison with Similar California Counties
4. Disaster Recovery
5. User Satisfaction Surveys
6. System Development Methodology
7. The New Managed Services Model and Centralization

In this report, not all of these topics are addressed with respect to all of the agencies/departments studied. In some cases where IT management of the topic area was deemed satisfactory, there is no comment about it in the report. For example, planning for Disaster Recovery by the County Assessor appears to be acceptable based upon the relative criticality of their applications and the likelihood of recovery. Therefore, it is not specifically mentioned in the report.

The Grand Jury performed the following tasks in the completion of this study:

1. Interviewed management and staff of CEO/IT and of the following agencies/departments, which are seven of the top eight IT spending agencies/departments:

> Social Services Agency
> Health Care Agency
> Sheriff-Coroner
> Probation
> Auditor/Controller
> OC Public Works
> Assessor

2. Toured the primary County datacenter and separate datacenters managed by OC Public Works, the Sheriff's Department, and the Assessor

3. Reviewed and analyzed:

   a) material and information provided as the result of interviews,
   b) publicly available County financial data,
   c) documentation and minutes of IT governance bodies,
   d) contracts with SAIC and Xerox for outsourced IT services (Master Services Agreements, Schedules, Appendices, Attachments),
   e) CEO/IT materials on the County Intranet site,

    f) Board of Supervisors meeting minutes and support material relating to IT matters from May, 2012 to Oct. 2013, and

    g) Quarterly IT Project Status reports from the first quarter of FY 2012-13 through the first quarter of FY 2013-2014, which is provided to the Board of Supervisors by the Project Management Office of CEO/IT.

4. Sent a survey questionnaire to the Chief Information Officers (CIO's) of seven other counties with populations over 1 million, (excluding Los Angeles County)

5. Reviewed IT industry best practices from textbooks and trade journals

ANALYSIS

Costs of IT

The costs of IT in the County can be considered in different ways. One way is to look at the amounts budgeted to CEO/IT for annual operating expenses. These funds go to "Internal Service Fund" 289.[10] The following table shows amounts budgeted for CEO/IT in Fund 289 for the past three complete fiscal years, broken down by general spending category.[11]

Table 2

FUND 289 IT BUDGET, FY '10-11 THROUGH FY '12-13 ($000's)

Fund 289 History	FY 2010-11	FY 2011-12	FY 2012-13
	BUDGET	BUDGET	BUDGET
Total Salaries & Benefits	7,293,226	7,401,310	7,393,452
Total Services & Supplies	37,044,722	34,587,703	35,441,376
Total Other Charges	6,861	-	-
Total Equipment	2,784,630	3,964,960	4,857,000
Total Structures & Improvements	450,000	997,040	1,771,190
Total Miscellaneous	3,550,803	2,628,307	935,579
Total Appropriations	51,130,242	49,579,320	50,398,597

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[10] CEO/IT also receives appropriations to Fund 297 for publishing, printing, and reprographic services, which are not addressed in this report.
[11] Figures provided by the CEO/IT

Note that Services & Supplies includes costs for contractors, which, along with services such as networks and datacenter management, are the bulk of expenditures in this category. According to information provided by the CEO/IT Office, the office currently has a staff of 50 County employees, and 111 contractors. Under the new Managed Services outsource contracts currently being implemented, for the most part the number of contractors will not be tracked as part of the aggregate number of staff.

The CEO/IT Office offsets expenses by charging back services it provides to agencies/departments. Chargeback amounts and where that revenue must be allocated, is strictly governed by the fact CEO/IT operates as an Internal Service Fund to cover its costs.[12]

Another way to look at County IT expenditures is to examine each agency's or department's spending. In addition to allocating funds to CEO/IT for services it receives, a department or agency may contract for and pay for services from outside providers such as network providers, consultants and contractors, equipment vendors, etc. Expenditures listed by department for 2012-13 for the top spending agencies/departments are shown above in Table 1 on page 6.

A third aspect is spending on new software development projects, which, for larger projects, typically extends over more than one year. Projects costing between $150,000 and $1 million per year that are funded out of the County General Fund are charged to Fund 038 (Data Systems Development Projects). General Fund projects are those that are usually used county-wide (i.e., across multiple agencies/departments). Projects under $150,000 per year, and those costing over $1 million per year, as well as some agency/department specific projects funded from outside the General Fund are reflected in the sponsoring agency/department budget and financial reporting. The IT Investment Review Board reviews and makes recommendations on requests for all IT development projects between $150,000 and $1 million.

A report combining CEO/IT and agency/department spending may be misleading in terms of overall County spending because some amounts remitted by agencies to CEO/IT are also spent by CEO/IT for outside services. Thus, the same amounts could be counted twice. In 2009, the Performance auditor addressed this double counting problem in its Audit Report of IT, Task I. It found that "Information Technology is a major County cost center, but no detailed framework has been consistently implemented for the collection, analysis, and reporting of these costs, both budgeted and actual, in order to inform policy makers as they allocate scarce resources." The report recommended that "CEO/IT should work with County agencies/departments to develop a budget versus actual comparison to track all information technology costs in the County."[13] That recommendation was implemented by the CEO/IT, and all IT costs in the County are now consolidated into one "Countywide IT Spend" report, in which double counting is eliminated.

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[12] See www.dof.ca.gov/FISA/PROSWCAP/ISFs/INTERN_1.PPT
[13] "Performance Audit of CEO/Office of Information Technology", Task 1 Report, pp.7-8

Cost Comparison with California Counties of Similar Population Size

One of the questions in the CIO survey questionnaire (noted above and summarized in Appendix A on page 36) was *"What is the approximate annual operating budget for all IT services in your county, including employee staff, contractors, hardware, software, data and voice networks, facilities, and other services?"* Tables 3 and 4, below, include a summary of the responses to this question.

IT COST COMPARISON OF CALIFORNIA COUNTIES[14,15]

Table 3

Counties with All IT Costs Included

COUNTY	2012 POPULATION	2012-13 IT BUDGET (000's)	IT COST PER RESIDENT	2012-13 COUNTY BUDGET (000's)	IT % OF COUNTY BUDGET
Riverside	2,268,783	$205,000	$90	$5,114,000	4.0%
Sacramento	1,450,121	$92,000	$63	$3,515,327	2.6%
Orange	**3,090,132**	**$150,000**	**$49**	**$5,627,561**	**2.7%**
Santa Clara	1,837,504	$76,000	$41	$4,159,183	1.8%

Table 4

Counties with Significant IT Costs Excluded

COUNTY	2012 POPULATION	2012-13 IT BUDGET (000's)	IT COST PER RESIDENT	2012-13 COUNTY BUDGET (000's)	IT % OF COUNTY BUDGET
San Diego	3,177,163	$130,000	$41	$4,845,200	2.7%
San Bernardino	2,081,313	$71,000	$34	$4,306,819	1.6%
Alameda	1,554,720	$48,000	$31	$2,694,500	1.8%
Contra Costa	1,079,597	$25,000	$23	$2,840,548	0.9%

The IT budgeted amounts shown are those reported by the CIO of each county. Table 3 shows those counties for which all IT budget costs were reported. Table 4 shows counties for which

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[14] Population from U.S. Census, 2012 estimate, http://quickfacts.census.gov/qfd/states/06/06059.html
[15] Approved 2012-13 budgets from county websites

reported IT budgeted costs do not include IT costs of major independent departments and agencies. For example, IT costs reported for Contra Costa County do not include Health and Social Services, Fire, Child Support, District Attorney, Public Defender, Recorder, and Elections. IT costs reported for Alameda County do not include Social Services., Sheriff, Health Care, Child Support Services, Probation, District Attorney, and Public Works. San Bernardino reported IT costs do not include Sheriff, Tax Collector, Welfare, Assessor, and Hospital. (Apparently, these counties have not taken the extra step to identify and report in a consolidated manner all IT costs in the county; it is notable that Orange County has done so.)

The tables analyze IT costs per county resident, and as a percentage of the total county budget, not including unreported costs. This comparison of IT costs would indicate that IT costs in Orange County are at least commensurate with, if not lower than, IT costs in the other California counties with similar populations. Other comparisons, such as by number of county employees or types or number of systems, may not be meaningful. For example, higher IT costs per county staff member may be reflected in higher productivity and result in lower overall costs in the county.

Cost Overruns

A great deal of publicity has surrounded recent contracts awarded for outsourcing Orange County datacenter and network operations, and the County's recent suit against a consulting company for failing to complete the Property Tax Management System (PTMS). Both contracts involved significant increases in costs after the initial bids, and, in the case of the network management, an increase in the final contract costs after the Best And Final Offer (BAFO) by Xerox.

One widely read Orange County news blog titled an article in May 2013 "IT Contract Cost Overruns Still Plague County Government." The article asserts that "In the last three months alone, supervisors approved nine IT contract extensions and overruns totaling $26 million…"[16] It continues to be referenced by the blog in subsequent articles alleging continued IT cost overruns.[17,18]

The Grand Jury studied whether IT cost overruns are indeed extensive and widely spread. First, the Grand Jury analyzed the Board of Supervisors meeting minutes for the 12 month period from May 2012 to May 2013 (which includes the period referenced by the blog) to evaluate amendments to existing contracts for IT services. With the exception of the four projects noted

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[16] Voice of OC, May 7, 2012, accessed Feb. 3, 2014, http://www.voiceofoc.org/countywide/county_government/article_26e76198-b3fb-11e2-ac84-0019bb2963f4.html

[17] Voice of OC, May 24, 2013, accessed Feb. 3, 2014, http://www.voiceofoc.org/countywide/this_just_in/article_619132b8-d77f-11e2-b467-0019bb2963f4.html

[18] Voice of OC, February 12, 2014, accessed Feb. 12, 2014, http://www.voiceofoc.org/countywide/county_government/article_2dd72892-9412-11e3-9650-0019bb2963f4.html

below in Table 5 and the Xerox network management contract, the Grand Jury concluded that the large majority of these amendments were to extend IT maintenance and on-going service contracts for additional periods of time and were not related to cost overruns.

Regarding the network management contract with Xerox, two factors contributed to the increase of $25.7 million above the BAFO, resulting in a final contract amount of $132.7 million. An increase of $10.9 million was for additions to the scope of work driven by new County business requirements and new locations. An increase of $14.8 million was for provision of services not previously considered, including responsibility for transformed circuits, an extended transition schedule, performance of subcontractors, and governance. It is doubtful that this could be called a cost overrun since the contract was not approved until after the increase.

Next, the Grand Jury analyzed all IT development projects on the quarterly IT Project Status reports provided to the Board of Supervisors by the Project Management Office of CEO/IT. These reports cover all County IT projects costing over $150,000, including those managed by agencies/departments. The Grand Jury examined the reports from the first quarter of FY 2012-13 through the first quarter of FY 2013-14 (covering the period from July 1, 2012 through September 30, 2013).[19] Table 5, below, lists the IT projects for which additional costs were approved for that period.

Table 5

APPROVED IT PROJECT OVERRUNS Q1 FY'12-13 THROUGH Q1 FY '13-14

PROJECT	AGENCY	ORIGINAL COST ESTIMATE	LATEST COST ESTIMATE	COST OVERRUN	OVERRUN % OF ESTIMATE	Reasons for Overrun
Identity Management	CEO	$728,030	$908,127	$180,097	24.7%	Technical difficulties and project delay
Correctional Health Records	HCA	$2,724,000	$3,000,000	$276,000	10.1%	Increased staffing requirement
e Government	CEO	$622,450	$801,823	$179,373	28.8%	Increased testing, aggressive schedule
Assessment Tax System II*	Assessor	N.A.	$27,963,840	N.A.	N.A.	Scope enhancement, project extension

*Note that budgets for the Assessment Tax System II (ATS II) are approved yearly, and, therefore, do not have an original cost estimate. It was completed successfully in 2011. Scope enhancements have been added since completion, and the cost estimate includes original development plus enhancements and extensions. ATS II is discussed further on page 23.

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[19] Quarterly IT Project Status Reports, accessed Jan 6, 2014, http://ocgov.com/gov/ceo/cio/initiatives/quarterly_it_project_reports

Table 6 lists development projects over the same time period that were on or estimated to be on their original approved budget.

Table 6

IT PROJECTS AT OR UNDER BUDGET, Q1 FY'12-13 THROUGH Q1 FY 13-14

PROJECT	AGENCY	ORIGINAL BASELINE BUDGET	LATEST COST ESTIMATE
BRASS (budgeting system)	CEO	$1,700,000	On-budget
Enterprise SharePoint	CEO/IT	$497,730	On-budget
IT Sourcing transition	CEO/IT	$3,572,510	On-budget
Behavioral Health Records	HCA	$12,312,194	On-budget
Asset Mgmt	OCPW	$578,476	On-budget
Disposal Website	W & R	$500,000	On-budget
Auto Indexing	CR	$175,000	On-budget
A/R replacement	W & R	$450,000	On-budget
VM refresh	CEO	$551,600	On-budget
Virtual Mail Imaging	CSS	$199,000	On-budget

While the cost overruns identified are a concern, and their reasons should be investigated thoroughly, they do not appear excessive or unusual. A well-known IT project management textbook published in 2010 notes that:

> "Information Technology projects have a poor track record in managing budget goals…For example, three separate surveys of software project cost overruns, done by Jenkins, Phan, and Bergeron, in 1984, 1988, and 1999, respectively, found that the average cost overrun for all of the projects in their survey samples (not just unsuccessful projects) was 33-34%."[20]

More recently, a 2011 Harvard Business Review study of 1,471 IT development projects, stated as "the largest global study ever of IT change initiatives", found a cost overrun average of 27% of original budget and noted a particularly large incidence of projects with a cost overrun of 200% on average.[21] In the study, the two predominant reasons for cost overruns were failure to terminate unsuccessful projects, and major conflicts between project and line organizations.

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[20] Information Technology Project Management, Sixth Edition Kathy Schwalbe, Course Technology, Boston, MA, 2010, p. 254,
[21] Harvard Business Review, accessed Jan. 6, 2014, http://hbr.org/2011/09/why-your-it-project-may-be-riskier-than-you-think

The cost overruns identified by the Grand Jury for the period studied total 2.6% of the total project budget for the period.

The Grand Jury's conclusion is that, while a concern, IT cost overruns have not plagued the County in the period examined, and such allegations are a misrepresentation of the facts. Cost overruns appear to be below industry and government norms.

Governance and Oversight of IT Projects

The "other side of the coin" of IT project costs is project benefits, including goals and objectives and the business case supporting the project.

The governance process for new IT projects includes reviews and approvals by the Technology Council, the IT Investment Review Board, and the IT Executive Council before final approval by the Board of Supervisors. Expenditures for new IT projects estimated at less than $150,000 are approved within the respective agency or department. For projects with estimated costs of $150,000 or more, the IT Investment Review Board requires an extensive and detailed cost-benefit plan and business case. Required information includes projected costs per year by specific category, expected cost savings such as labor efficiency, cost avoidance, and other business benefits. Projects are then scored based on these and other criteria, and ranked for final approval. Projects considered "strategic" require additional review and approval under the County's Strategic Project review process.

As noted above, the costs and progress of IT projects over $150,000 are tracked and reported to the Board of Supervisors quarterly by the CEO/IT Project Management Office.

The IT Strategic Plan developed in 2009 calls for "Lessons Learned" to be presented to the Technology Council after implementation of new systems.[22] That process, including a required Lessons Learned form, has been underway for a number of years for projects costing over $150,000 and initially approved by the IT Investment Review Board. However, the process is not always followed, or followed in the prescribed format, by agencies/departments.

The 2010 Performance Audit of CEO/IT Tasks III-IV Report found that "CEO/IT does not measure IT project performance beyond schedule and budget metrics. Specifically, CEO/IT does not measure actual vs. projected benefits anticipated from project business case analyses." The Performance report noted "It is important from both a project performance and a learning perspective that CEO/IT compares the business case and project plan against actual results. By conducting this validation and tracking actual savings or benefits, CEO/IT can better estimate the costs and benefits of future projects and measure the actual success of its projects and

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[22] IT Strategic Plan at http://OCintranet.ocgov.com (accessible through Orange County Intranet), accessed Dec. 11, 2014.

initiatives." The audit recommended "a more rigorous project performance measurement process."[23]

CEO/IT's response was to agree with the finding and to concur with the recommendation, stating "CEO/IT will enforce project post-implementation reviews for its projects. Agency managed projects should be evaluated for benefit by the business unit."[24] In other words, CEO/IT disagreed with and declined to follow the recommendation that their post-implementation reviews include an evaluation of whether the originally stated business case and objectives were achieved. CEO/IT said that this should be the responsibility of the business unit.

Information Technology and project management best practices generally recommend that post implementation reviews or audits of projects include evaluation of the achievement of project goals. For example, see the practices prescribed by the Project Management Institute in their Project Management Body of Knowledge (PMBOK) best practices guidelines.[25] Government and industry practices consistently include such reviews.[26] The U.S. Department of Justice Systems Development Life Cycle Guidance Document of January 2003 states that "A post-implementation review shall be conducted … to verify that the intended benefits are derived as projected."[27] The Grand Jury agrees with these best practices and with the recommendation of the Performance Auditor.

Some agencies/departments do conduct their own limited post-implementation reviews. However, none of the agencies the Grand Jury studied have formal reviews or reports on achievement of project business case or business goal achievement. In a governance model, giving business units (agencies/departments) the responsibility to perform and report their own evaluations is asking them to audit themselves. Clearly, there is not much incentive for an agency/department to report that a project it sponsored and for which it estimated costs and associated benefits, did not meet the goals which the County gave it money to achieve.

The Grand Jury believes that this is an area where proper IT governance is lacking. CEO/IT should include in their post-implementation reviews of IT projects an evaluation of the achievement of project goals and the business case, as originally presented by the agency/department in their request for funding. Reviews of achievement of business objectives should continue over the period of time for which business goals were projected to be achieved, and over the period of time covered by the business case.

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[23] "Performance Audit of CEO/Office of Information Technology, Tasks III-IV Report, pp. 58-59, http://ocgov.com/civicax/filebank/blobdload.aspx?BlobID=10730
[24] Response to Performance Audit of CEO/IT – Task III - V Report, p. 15, http://ocgov.com/civicax/filebank/blobdload.aspx?BlobID=10731
[25] A Guide to Project Management Body of Knowledge (PMBOK Guide), Fifth Edition, Project Management Institute, Newton Square, PA 2013, p. 533.
[26] See, e.g., Post-Implementation Reviews of Information System Development Projects, accessed Jan. 6, 2014, http://www.sao.state.tx.us/reports/main/96-055.pdf
[27] Accessed Jan. 6, 2014, http://www.justice.gov/jmd/irm/lifecycle/ch10.htm

Comparison with California Counties of Similar Population Size

As mentioned, the Grand Jury sent survey questionnaires to the Chief Information Officers (CIOs) of the seven other California counties with populations over 1 million (excluding Los Angeles County). The survey went to CIOs in the counties of:

Alameda
Contra Costa
Riverside
Sacramento
San Bernardino
San Diego
Santa Clara

Cost comparisons are discussed beginning on page 9 and shown in Table 3 and 4 on page 10. Appendix B on page 37 summarizes the results of the survey and shows that there are many more similarities in the management and use of Information Technology in these counties and in Orange County than there are differences.

In all but two of the counties IT reports to a County Executive or Administrative Officer. In San Bernardino IT reports through Human Resources. In Alameda, the Registrar of Voters is also the IT Director and is an appointed position. In all counties except Santa Clara, departments can freely contract with outside service providers for IT services, with some degree of consultation with or approval by IT required. Santa Clara responded to this question by saying such contracting is "politically not encouraged", and requires prior union review. All counties except San Diego provide IT services to outside organizations, particularly local law enforcement. Only Sacramento stated that it provides datacenter space and services to a private company, as does Orange County.

Most of the counties, like Orange, have a central datacenter. Large departments in other counties, which usually include most of the departments of elected officials, run their own IT. How much to centralize has attracted substantial attention lately, and the trend is toward more centralization, especially of "commodity" services such as help desk, desktop support, and network management. Attempts at centralization are generally meeting with resistance from elected officials and from large departments.

With the new outsourced contracts in Orange County, it will become the second-most heavily outsourced county among the eight. San Diego County is unique with its complete outsourcing of IT services. All the counties, with the exception of San Diego, are unionized. Also, Orange County IT appears to have a higher degree of governance and oversight than many other counties, with four specific councils or boards assigned that function. Santa Clara, Sacramento,

and San Diego approach Orange County's level of governance. Contra Costa reported no IT oversight at this time.

Disaster Recovery

Of particular concern to the Grand Jury is the current capability of CEO/IT, as well as a number of County agencies, to recover computer servers, networks, and other resources supporting critical business processes in the event of a major disaster. Such a disaster could include physical events such as a major earthquake, fire, or terrorist attack, or a cyber-attack, making these resources inoperable.

Disaster Recovery (DR) has come to be defined as recovering computing related resources from a disaster, and "Business Continuity" refers to recovering all aspects of an organization, including computing resources. The Disaster Recovery Institute in the United States[28], and the Business Continuity Institute[29] based in Great Britain, publish best practices in the disciplines and confer professional certifications based on experience and passing a certification exam.

DR best practices call for successfully testing recovery procedures, resources, and outcomes in order to verify the workability of a DR solution. Quoting from the Disaster Recovery Journal, the most widely circulated publication in the discipline, "Most experts will agree that running tests and exercises are the best way to ensure preparedness."[30] Successful completion of tests means that users, who will have to rely on computer resources to meet their business needs, are able to complete test business transactions to their satisfaction.

Setting up and completing such tests usually involves prior setup of an alternate datacenter, and prior setup of the ability to re-route data network connections so users will quickly connect to the alternate datacenter in a disaster. During testing (or in a real disaster) the alternate datacenter and production applications must be activated, current production data must be loaded or activated, and user network connections re-routed. Then pre-selected sample business transactions are run by business users and the results (e.g., invoice formatting and amounts, accounting listings and totals, etc.) are compared to expected results. This is called regression testing.

CEO/IT Disaster Recovery

CEO/IT offers Business Continuity and DR services as part of its Service Catalog. As part of Business Continuity Planning, the recovery priorities of business processes are ranked as "A", "B", or "C" based on a number of factors such as cost of downtime and recovery, and regulatory consequences. The primary DR service from CEO/IT is for agencies/departments to recover

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[28] See www.drii.org
[29] See www.thebci.org
[30] "The State of IT Resiliency and Preparedness", Disaster Recovery Journal, Winter 2014, Vol. 27, No. 1, p. 16.

critical applications which run at the main County datacenter. Currently, that service relies on using backup computer platforms at the Solano County government datacenter under a mutual backup agreement. Most large agencies in Orange County use this service for some or all of their applications. Some also have their own IT departments and have established differing DR plans. Some rely on multiple datacenter locations within their own agency, some rely on agreements with outside vendors to provide DR services, and some have no outside datacenter arrangements and simply back up at their local site.

Appendix C on page 38 summarizes current DR plans and testing accomplishments of the seven agencies/departments the Jury analyzed.

The Grand Jury identified four key agencies/departments that rely on the County datacenter which have not successfully completed DR test exercises of their DR solution currently in place. These agencies are the Social Services Agency, the Health Care Agency, the Probation Department, and the Auditor/Controller.

The last test of the Solano County site, which these business units use, was in August of 2013. In that exercise, many of the required testing steps were done, including recovering data, connecting to the alternate facility, and running applications, however, transactions were not completed or verified. Such incremental testing is not uncommon, where testing is planned to reach certain milestones, and accomplish further milestones in subsequent years. Such testing also requires agency/department cooperation and support. The Grand Jury understands that the Solano arrangement is still active, and that transaction completion and verification had been planned by CEO/IT for the 2014 test. However, this plan has been cancelled because the new managed services outsource contracts call for a new DR solution.

This means that if a major disaster were to occur today disabling the primary Orange County datacenter or agency or department datacenters, there is a high degree of uncertainty regarding the time and cost of recovery, or whether a reasonably acceptable recovery is even possible.

The new DR solution for CEO/IT hosted systems (now SAIC hosted) calls for use of a Recovery Center in Scottsdale, Arizona, run by the largest commercial provider of DR solutions in the U.S. (The Auditor/Controller had a previous contract with this company for recovery of its Property Tax Management System and successfully tested it.) Planning for this solution has just begun and must be integrated with the entire transition process to the SAIC and Xerox managed environment. The Grand Jury understands that the target is to conduct initial test exercises in fall of 2014.

Since some agencies/departments are currently operating without adequately tested DR plans, and, in some cases without adequately defined DR arrangements, CEO/IT and the Board of Supervisors should place a high priority on completing new arrangements for disaster recovery

of the County datacenter and corresponding network connections. High priority should also be placed on planning for and conducting test exercises of these arrangements which verify the ability to complete critical business transactions.

Sheriff's Department Disaster Recovery

The Grand Jury noted that the Orange County Sheriff's Department has significant deficiencies in its DR plans. The Sheriff's Department backs up its production mainframe and server platforms with a similarly configured mainframe and servers. Both mainframes as well as critical servers are in the Sheriff's main datacenter. The Sheriff's critical systems, including Jail, Field, Criminal History, and Records applications run on these platforms. While the Sheriff's IT staff reports establishing standard physical security and cyber security provisions, clearly major disruptions and disasters happen despite standard protections being in place.

The Sheriff's IT staff recognizes that there is no off-site backup capability in place for a major disaster event that disables the datacenter and therefore both of the mainframes and critical servers. Such an event would cripple numerous public safety functions of the Sheriff's department, including, access to Warrants, the Criminal Justice Information System and the Department of Motor Vehicles, Criminal History, inmate bookings and tracking, etc. One of the reasons for the lack of an offsite DR solution is the Sheriff's Department's plan to modernize and replace most of its critical systems within five years, and the desire to wait until that plan is better defined. Another is the lack of funding for a shorter-term solution. Three possible shorter term solutions have been proposed by the Sheriff's Department:

1. Relocate the second Unisys mainframe computer to the County Emergency Operations Center (EOC), and construct a second, more secure underground data line from the current Sheriff datacenter to the EOC. This second line would be for replicating data synchronously to be immediately available in a disaster. (There is currently a data line from the Sheriff's datacenter to the EOC. However it is not completely underground and is not adequately secured or physically protected. The current line has experienced failures, one as recently as January of 2014.)
2. Relocate the second mainframe to the EOC, and construct facilities for microwave communication to the Sheriff's datacenter. This would be less expensive and faster to construct than Option 1 because the Sheriff currently has microwave equipment that could be utilized, and has microwave expertise on staff.
3. Plan a DR capability to integrate with CEO/IT's planned Managed Services solution. This option is dependent upon implementation of the CEO/IT solution with the Managed Services outsource provider. It also presents some challenges in obtaining the appropriate law enforcement security certifications for non-Sheriff department staff supporting this solution.

The Sheriff's Department submitted a 2014-15 Information System Service Request to the IT Investment Review Board for $2.3 million for a redundant disaster recovery location. The specific solution proposed is unclear from the request. In February the IT Investment Review Board declined approving the request for the 2014-15 budget, and instead recommended waiting until the new Managed Services solution is in place and using that solution. The final outcome of the request is undetermined at this time.

Because critical law enforcement, public protection and safety functions are currently at risk, the Sheriff's Department and the Board of Supervisors should place the highest possible priority on studying the alternatives for a short-term DR solution for the Sheriff's critical systems, selecting and funding one of the alternatives, and implementing and testing it as soon as possible.

Regarding County Disaster Recovery overall, it should be noted that the Grand Jury is not asserting that recovery from a disaster cannot be accomplished by CEO/IT and the agencies/departments mentioned. Certainly, if a disaster happened today, County staff would work tirelessly until the job of recovery was done. However, improvising, rather than operating with established and tested plans, is like operating without insurance. The accepted way to verify the costs and time required for recovery, and to verify whether recovery is possible, is to establish adequate plans and test them, and that has not been completed successfully in the instances noted above.

User Satisfaction Surveys

The contract for outsourced services that ended in 2013 required a semi-annual user satisfaction survey of agencies/departments using these services. The survey was developed jointly by the outsource vendor and CEO/IT, and asked 30 questions relating to performance of networks and systems, responsiveness and knowledge of outsource staff, and resolution of problems. The annual average of the survey results determined whether the vendor received a performance incentive or was assessed a performance penalty. Generally, users have expressed high satisfaction with these services. As shown in Table 7, on a scale of 1 to 4, with 4 being the highest level of satisfaction, overall average scores for the past three years have been 3.59, 3.54 and 3.66.[31]

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[31] Survey results provided by CEO/IT

Table 7

Outcource Vendor User Satisfaction Survey Summary			
Category / Fiscal Year	*FY '10-11*	*FY '11-12*	*FY '12-13*
General	3.53	3.49	3.63
Application Support Services	3.63	3.59	3.79
Network, Platform & Server Support	3.56	3.49	3.61
Data Center Services Desk	3.60	3.56	3.63
Phone Services	3.70	3.75	3.77
IT Enterprise Services	3.50	3.40	3.58
Average	**3.59**	**3.54**	**3.66**
Ratings are on a scale of 1 - 4, with 4 the highest level of satisfaction			

The 2010 Performance Audit of CEO/Office of Information Technology Tasks III-IV Report includes a survey of CEO/IT customers.[32] Of 49 respondents, 24 (~50%) rated their overall satisfaction as a customer of CEO/IT as good or excellent, with another 14 (29%) rating it as average.

The 2013 contracts with XEROX and SAIC for managed services both specify that the County shall "conduct satisfaction surveys semi-annually…or more frequently, and Vendor shall provide reasonable assistance." The contracts call for these surveys as part of a "balanced scorecard… to gauge service performance, relationship quality and business alignment on an ongoing basis." The contract also specifies that, from the results of the surveys, the "County, with Vendor's assistance, shall develop an IT improvement plan, which shall propose changes to the County's and Vendor's IT policies and practices".[33] Unlike the previous outsource contract, neither of the new contracts provides incentives based on the results of these surveys. The contracts allow the County to establish penalties, however, the County has chosen not to do so at this time. (Incentives and penalties in the new contracts relate to pre-defined and measured service levels. See **The New Managed Services model and Centralization,** page 25.)

The agencies/departments which the Grand Jury studied conduct limited surveys to determine user satisfaction with IT. For example, the Health Care Agency conducts an annual survey of its staff "to assess their satisfaction with services received in the past year from the various Administrative Services divisions in the Agency", including IT. In the most recent HCA survey, with 856 respondents, HCA IT received the highest service area rating of over 83%. Also, the

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[32] The 2010 Performance Audit of CEO/Office of Information Technology Tasks III-IV Report, Appendix A,
http://ocgov.com/civicax/filebank/blobdload.aspx?BlobID=10730
[33] Master Services Agreements, section 4.13 Satisfaction and Communications

Sheriff's Department IT Help Desk surveys individuals after a problem incident regarding their satisfaction with the resolution.

The Grand Jury was not able to identify any reference to user satisfaction surveys in the County of Orange IT Strategic Plan or the IT governance model. The Grand Jury found no guidelines for the contents of IT user satisfaction surveys, or CEO/IT policies or procedures for conducting such surveys. CEO/IT could identify no regular, comprehensive survey programs in agencies or departments.

It has become a maxim that IT only exists in an organization to serve the organization's goals and needs, not for its own sake. User (or customer) satisfaction is a key measurement of how well an organization (or business) is delivering its products or services. According to the research and consulting firm Gartner Group, "End-user satisfaction can make or break IT's credibility and future success… When it comes to the IT's reputation, the importance of customer satisfaction cannot be overestimated."[34] Regular user satisfaction surveys have been widely adopted as an IT best practice throughout industry.[35]

The Grand Jury believes that CEO/IT should establish policies regarding the regular use of IT user satisfaction surveys. Such policies should be incorporated into the IT governance model, and associated guidelines and procedures should be developed. CEO/IT should strongly encourage departments and agencies which have their own IT organizations and sets of users to follow these policies and procedures. It would also be a useful tool and quality incentive to conduct and publish the results of surveys at least yearly and make them available to all County agencies/departments.

System Development Methodology

Motivated partly by the highly publicized alleged failure of the County's Property Tax Management System (PTMS) project,[36] the Grand Jury investigated system development methods that have been used successfully for major IT projects in the County. The goal was to identify factors leading to successful implementation and achievement of business and operational objectives.

NOTE: The Grand Jury did not investigate in detail the circumstances leading to the current status of PTMS, and the Grand Jury renders no opinion regarding fault or liability relative to the current litigation.

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[34] Accessed Jan. 6, 2014, http://www.gartner.com/technology/consulting/benchmarking/it-customer-satisfaction.jsp
[35] Accessed Jan. 6, 2014http://www.computereconomics.com/article.cfm?id=1715
[36] See "County's Lawsuit Alleges Fraud by Software Contractor", Accessed Jan. 6, 2014 at
http://www.voiceofoc.org/countywide/county_government/article_aaf1cd04-1f33-11e3-96c2-0019bb2963f4.html

A number of agencies/departments in the County appear to have achieved notable success in recent systems development projects. For example:

1. The Assessor Department re-engineered the County's Assessment Tax System (ATS), replacing the 23 year old legacy mainframe application with ATS II. ATS II enables assessment services, including property valuation, production of assessment rolls, compliance with revised California law and regulations, and helping property owners understand their property valuations. The Assessor contracted with two vendors for consulting and support services on the project. The ATS II System was successfully deployed to production in August 2011 and was used to develop and deliver the 2012 Annual Rolls of Value in July 2012. Implementing ATS II was a seven-plus year project, and was a major accomplishment, such that Los Angeles, Santa Clara, and Fresno counties have expressed interest in purchasing licenses to use ATS II.

2. OC Public Works has had a number of recent successful software development projects. One is "OC WORKS", which allows citizens to take photos on their portable phone of potholes, graffiti, and other problems on County property requiring attention by Public Works. Another is a fixed asset inventory system, also using mobile phones and QR codes to scan and input data from remote locations. In addition, the Department's Progress Payment (ProgPay) System was selected for a 2013 Merit Award by the California State Association of Counties (CSAC).

3. The Task Management System developed by the Social Services Agency was recognized with a 2012 Challenge Award from CSAC. This award recognizes especially innovative county projects utilizing best practices. The system integrates information and management of SSA cases into one system, allowing detailed tracking of case related tasks and facilitating better communication between clients and the agency.

In addition, the Health Care Agency's new Behavioral Health System appears as of this writing to be headed for a successful implementation, starting in the spring of 2014. It will modernize the current ten year old outdated system and create a completely integrated and interoperable Electronic Health Records (EHR) system for Behavioral Health Services. This has been the largest recent system development project in the County with a cost of over $12 million for the first phase and total funding of approximately $23 million. As of this writing the project is on-time and on-budget.

A key common factor among all of these projects is the use to varying degrees of what has become known as the "Agile" software development methodology.[37] As discussed below, this is

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[37] See Shore, J., & Warden S., The Art of Agile Development, O'Reilly Media, Inc. 2008, ISBN 978-0-596-52767-9

in contrast to what appears to be the methodology used for the PTMS project, known as the "Waterfall" method.

Agile Versus Waterfall Methodologies

The theory of Agile methodology began development in the 1970's and was formalized in 2001 with the publishing of the *Manifesto for Agile Software Development.*[38] Agile is a collaborative methodology, which means that end-users and developers work closely together throughout the entire project. It is also incremental and iterative in that one piece at a time is developed and implemented, and future pieces build upon previous ones. The Public Works Department calls its iterations "feature sets", which are new releases (or enhancements) every two weeks, while the Assessor department calls their building blocks "frameworks". Although all facets of Agile development are not used in each department mentioned above, many of the facets are used by each of them.

The rationale for the Agile approach stems from the conundrum that arises at the beginning of large projects, when the developer asks the user "What do you want?", and the user responds "What can I have?" The developer may have the knowledge of what the technology can do generally, while the user knows the business process and requirements. A collaborative and iterative approach is a creative process wherein each learns from the other incrementally as they build a solution. The user begins to ask more intelligent "Can it do this?" questions, while the developer is able to provide more "What about this?" suggestions.

Agile systems development is facilitated by modern system development tools and programming languages that allow rapid prototyping with mock screens and sample dummy databases and processes. These tools allow users to see and actually work on operating mock-ups of their systems, before they are actually developed. Such an approach limited to previous generations of computer technology was simply too costly, time consuming, and cumbersome.

The Agile approach contrasts with the traditional, or "Waterfall" approach, wherein each phase of a project is done in its entirety before "going over the waterfall" to the next phase.[39] Thus, a requirements definition is completed, then design is done, then programming, etc. It attempts to be predictive, rather than adaptive, and know all requirements before design is started, all design issues before programming is started, etc. In reality, problems and issues encountered in subsequent phases often cause changes to previous phases, and that is one major source of cost overruns on projects. For example, in programming, it may be determined that a certain set of data is required to make some function work (like a customer number, or some totaled amount). This could cause some redesign of a database or input screens. Also, users may not discover a major flaw, or happen upon a particularly elegant solution, until they are actually testing the

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[38] Ibid., pp. 10-11
[39] See Cuspin, Lisa & Gregory, Janet, Agile Testing, Pearson Education, Boston, MA, 2009, ISBN 978-0-321-53446-0, pp.12-13.

system hands-on. The Waterfall approach makes it much more difficult and expensive to incorporate these changes, and the problem magnifies in relation to the size of the system. Conversely, the Agile approach is more difficult for management to budget for and control.

Simply stated, for PTMS it appears that in a very large, approximately 600 page requirements document was developed by an outside company, with users given one opportunity to comment on each portion of the document. It was then sent to another outside consulting company to develop and implement. The Grand Jury's review of the document found that it is primarily a narrative of "as is" and "to be" processes, with some flowcharts and stick-figure process diagrams. The Grand Jury found no sample "to-be" screens or reports, or other opportunities for users to interact with developers before it was sent "over the waterfall." Years later, after expending about $5 million on system development, CEO/IT and potential County users discovered major technical and functional deficiencies in the system and have determined it is unsalvageable.

CEO/IT Current Methodology

Although CEO/IT has endorsed and provides certain Agile development tools, the Project Management Methodology for systems development outlined on the CEO/IT website sets forth what is very much the traditional Waterfall methodology.[40] It describes six project phases, and it proposes design build schedules that require completion of prior phases before beginning the next phase. The six phases outlined are as follows:[41]

1. Idea/Concept
2. Business Case or Customer Project Estimate
3. Initiating Phase
4. Planning
5. Executing/Controlling
6. Closing

While the CEO/IT methodology includes many valuable concepts, tables, and diagrams, it does not include any reference to more recent Agile methodologies. Thus, the CEO/IT methodology does not take into account the success that Agile has achieved in the County, and, in general, in Information Technology over the past ten to twenty years. The Grand Jury recognizes that certain kinds of projects lend themselves to more traditional development methodologies, and that the spectrum between Agile and traditional methodologies is a continuum rather than an either/or question. County departments and agencies can choose (and have chosen) to develop

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[40] http://ocgov.com/civicax/filebank/blobdload.aspx?BlobID=21140,(available through the County Intranet), accessed Jan. 6, 2014
[41] County of Orange Project Management Methodology Handbook http://intra2k3.ocgov.com/pmo/index.asp (available through the County Intranet), accessed Dec. 11, 2014.

systems using their own methodologies; however the recommendations on the CEO/IT website and by the Project Management Office tend to carry a certain degree of authority and credibility.

CEO/IT should study, embrace, and incorporate Agile methodologies into the system development methodologies offered by the Project Management Office and presented on its website. CEO/IT should have the necessary expertise, and should promote use of Agile methodologies on projects where, and to the degree it is appropriate.

The New Managed Services Model and Centralization

The provisions of the new outsource contracts with SAIC and Xerox are virtually identical. They fall under what has been termed a "Managed Services" model, in which the County tracks and measures the vendors based on delivery of specified service levels (e.g. system and network availability, time to resolve reported problems, terminal response time, etc.). The previous contracts followed a "staff augmentation" model where the County contracted with a provider for time of staff resources and additional material and other expenses. In the new contracts, SAIC and Xerox can be financially penalized up to 20% of their contract fees for failing to meet specified service levels or critical milestones.

Services in the new contracts are based on designated "Resource Unit" volumes. A Resource Unit may be a server, a PC, or a service desk call (for SAIC), or a designated volume of voice or data ports/phones (for Xerox). The contracts control the costs of increases or decreases of service volumes by specifying ranges of "Resource Unit" volumes within which costs do not fluctuate. In the contracts these ranges are called "deadband zones". In addition to certain fixed management and administration fees, costs to the County can only increase if Resource Unit volumes increase by more than five percent, and can decrease if volumes decrease by more than .95 of one percent.

Service level requirements and deadband zones appear to be excellent mechanisms for managing costs. The Grand Jury concluded that costs for these outsourced services will be very predictable over the life of the contracts, as long as the County can predict, manage, and control volumes over that period. This is not to say that volumes won't fluctuate, especially as more agencies/departments' IT services come under the scope of the new contracts; however, they will be more predictable and manageable under the new contracts.

Transition to the new Managed Services model was completed for SAIC in February, 2014, and for Xerox in March of 2014.

Centralization

In November 2012 the Board of Supervisors held a series of workshops related to the Countywide Strategic Plan. At the workshops and the subsequent Board of Supervisors'

meeting, CEO/IT was directed to explore centralization of IT services and the inclusion of County agencies/departments into the scope of new outsourced services.[42]

During Grand Jury interviews the move by CEO/IT toward consolidation of IT services under the new Managed Services contracts was a subject consistently raised by County senior management, CEO/IT staff, and department and agency staff. CEO/IT has advised various agencies/departments that they will be required, under the Direction of the Board of Supervisors and the CEO, to move certain services under CEO/IT management. Services include those covered under the new SAIC and Xerox contracts such as desktop support, IT service desk, and network management, and other services such as centralized procurement. While County senior management and CEO/IT believe such an increase in centralization will save the County money overall, and improve IT efficiency, agency/department management consistently expressed concern over loss of control and decreased quality of these services.

The Grand Jury agrees that consolidation and centralization of some IT services will provide economies of scale and eliminate redundancies, resulting in overall cost savings. It will also standardize the delivery of these services, allowing for more consistent governance and alignment with County strategies and IT guidelines.

The Grand Jury also acknowledges the risk this initiative presents of reducing the quality and level of service currently provided within agencies/departments with their own dedicated IT resources. This could occur when services such as application development and support, service desk, and others are provided by new staff not experienced or familiar with the needs and operations of particular departments and agencies. IT service levels may also be affected in agencies/departments that are given lower priority in the overall service model, compared to being the top priority when agencies were servicing themselves. The quality and level of such services will be particularly at risk during the time of transition to the new services environment, and during the training and re-alignment of new staff.

The Grand Jury recognizes that centralization of some IT services and resources may make more sense than others, and this may vary by function and by business unit. In agencies where extensive experience and specialized knowledge is critical, it probably does not make sense to centralize application development and other similar activities. Before the model for delivery of services to agencies and department is changed, CEO/IT should undertake a thorough analysis of the business case for the change (costs and benefits), and one of the IT governance groups should review this case. The analysis should include a plan for prevention or mitigation of the possible reduction of service levels and quality, developed with and agreed to by the affected agency.

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[42] "Strategic Priority – IT Centralization Assessment Draft", February 15, 2013, provided by CEO/IT

FINDINGS

In accordance with California Penal Code Sections 933 and 933.05, the 2013-2014 Grand Jury requires (or, as noted, requests) responses from each agency affected by the findings presented in this section. The responses are to be submitted to the Presiding Judge of the Superior Court.

Based on its investigation of Information Technology in Orange County, the 2013-2014 Orange County Grand Jury has arrived at eight principal findings, as follows:

F.1. Based on the Grand Jury's survey of the Chief Information Officers of California counties with populations of one to three million, current costs of Information Technology in Orange County, per resident, appear to be comparable or lower than IT costs in California counties of similar population size.

F.2. IT project cost overruns do not plague the County. However, policies and procedures are not in place in the IT governance structure to adequately measure and evaluate achievement of benefits and goals of IT projects over their entire project life cycle.

F.3. Recovery of IT resources and services will be critical to the functioning of vital County services in the event of a catastrophic disaster event. Recent Disaster Recovery (DR) exercises for the CEO/IT datacenter have not been completed successfully. Thus, the costs, time, and possibly the ability to recover some or all datacenter operations after a catastrophic disaster event has not been determined or demonstrated.

F.4. The Sheriff's Department has both its primary production and backup mainframe computers and critical server platforms at its own datacenter. Those computers run most of the Sheriff's critical applications, including Field, Booking, Jail, Criminal History and Records, and interfaces to outside databases such as the CJIS, DOJ, DMV, etc. A significant physical disaster event or cyber-attack disabling that datacenter would almost completely disrupt the Sheriff's major law enforcement and public safety and protection functions. There is currently no plan in place to recover the Sheriff's datacenter functions at another location.

F.5. IT best practices indicate that user satisfaction should be a key measurement of IT services. The current contracts for managed services both specify that the County shall "conduct satisfaction surveys semi-annually…or more frequently." However, there are no consistent countywide policies, guidelines, or procedures for user satisfaction surveys of all IT services, including those provided by agencies/departments, and surveys are not taken or published on a regular basis.

F.6. The CEO/IT's project management methodology that is accessible through the County Intranet site describes a traditional "Waterfall" approach to system development. Although still being used in the industry, Waterfall is a somewhat dated approach. More current Agile system

development methodologies have proven very successful in several County agencies and are recommended in the IT industry as best practices. Use of the Waterfall approach may have been a factor in the failure of the PTMS development project; however, there are many factors that can contribute to the success or failure of system development projects, and the Grand Jury renders no opinion as to the fault or liability relative to any litigation.

F.7. Under the new managed services contracts, costs for these outsourced services will be very predictable over the life of the contracts, as long as the County can predict, manage, and control volumes (data, transactions, service calls, etc.) over that period.

F.8. Under the new outsourced contracts, consolidation and centralization of some IT services will result in overall cost savings. It will also standardize the delivery of many services, allowing for more consistent governance and alignment with County strategies and IT guidelines. However, agencies/departments are concerned that additional centralization will result in higher costs and reduced levels of service for them. Centralization of some services may make more business sense than others, and this may vary by function and by business unit.

Penal Code §933 and §933.05 require governing bodies and elected officials to which a report is directed to respond to findings and recommendations. Responses are requested, from departments of local agencies and their non-elected department heads.

RECOMMENDATIONS

In accordance with California Penal Code Sections 933 and 933.05, the 2013-2014 Grand Jury requires (or, as noted, requests) responses from each agency affected by the recommendations presented in this section. The responses are to be submitted to the Presiding Judge of the Superior Court.

Based on its investigation of Information Technology in Orange County, the 2013-2014 Orange County Grand Jury makes the following nine recommendations:

R.1. CEO/IT should enhance the current format and guidelines for post implementation reviews of IT projects to include reviews of the achievement of the originally approved project goals and business case. Reviews of the achievement of project goals and the business case should be reviewed by the IT Investment Review Board, and should continue until the achievement (or failure) can be verified. (**F.2.**)

R.2. As part of the implementation of the new Managed Services contracts with SAIC and Xerox, the Board of Supervisors and CEO/IT should place high priority on successfully

completing a disaster recovery exercise with the new DR services provider, and marshaling agency/department support to do so. . Successful completion would include completion and verification of all transactions supporting processes the County datacenter supports that are designated "A" priority in Business Continuity plans. (**F.3.**)

R.3. Because critical law enforcement, public protection and safety functions of the Sheriff's Department are currently at risk, The Board of Supervisors and the Sheriff should place the highest possible priority on studying the alternatives for a short-term DR solution for the Sheriff's critical systems, selecting and funding an alternative, and implementing and testing it as soon as possible. (**F.4.)**

R.4. CEO/IT should strengthen its leadership role in seeing that all County agencies/departments with critical functions dependent on IT processes implement and test DR procedures to meet stated recovery goals. (**F.3., F.4.**)

R.5. CEO/IT should establish policies and procedures, and recommend the format and timing for user satisfaction surveys of IT services users, including CEO/IT services, and agency/department IT services. CEO/IT should review and publish the results of surveys of themselves and of agencies/departments and make the results available to all agencies/departments. (**F.5**.)

R.6 CEO/IT should study, embrace, and consider incorporating Agile methodologies into the system development methodologies offered by the Project Management Office and presented on its website. CEO/IT should have the necessary expertise, and should promote use of Agile methodologies on projects where, and to the degree it is appropriate. (**F.6.**)

R.7. In order to control and predict IT costs under the new Managed Services contracts, CEO/IT should use contract and other mechanisms to very closely monitor IT volumes specified in the contracts. Current and predicted costs or rate changes, and recommendations to avoid future costs increases based on volume trends should be reported to affected departments and agencies and to the Board of Supervisors. (**F.7.)**

R.8. Before centralizing IT services for an agency or department, CEO/IT should conduct a thorough analysis of the business case for the change, and one of the IT governance groups should review this case. The analysis should include a plan for prevention or mitigation of the possible reduction of service levels and quality, developed with and agreed to by the affected agency. (**F.8.)**

REQUIRED RESPONSES

The California Penal Code §933 requires any public agency which the Grand Jury has reviewed, and about which it has issued a final report, to comment to the Presiding Judge of the Superior Court on the findings and recommendations pertaining to matters under the control of the agency. Such comment shall be made no later than 90 days after the Grand Jury publishes its report (filed with the Clerk of the Court); except that in the case of a report containing findings and recommendations pertaining to a department or agency headed by an elected County official (e.g. District Attorney, Sheriff, etc.), such comment shall be made within 60 days to the Presiding Judge with an information copy sent to the Board of Supervisors.

Furthermore, California Penal Code Section §933.05 (a), (b), (c), details, as follows, the manner in which such comment(s) are to be made:

(a) As to each Grand Jury finding, the responding person or entity shall indicate one of the following:

(1) The respondent agrees with the finding

(2) The respondent disagrees wholly or partially with the finding, in which case the response shall specify the portion of the finding that is disputed and shall include an explanation of the reasons therefore.

(b) As to each Grand Jury recommendation, the responding person or entity shall report one of the following actions:

(1) The recommendation has been implemented, with a summary regarding the implemented action.

(2) The recommendation has not yet been implemented, but will be implemented in the future, with a time frame for implementation.

(3) The recommendation requires further analysis, with an explanation and the scope and parameters of an analysis or study, and a time frame for the matter to be prepared for discussion by the officer or head of the agency or department being investigated or reviewed, including the governing body of the public agency when applicable. This time frame shall not exceed six months from the date of publication of the Grand Jury report.

(4) The recommendation will not be implemented because it is not warranted or is not reasonable, with an explanation therefore.

(c) If a finding or recommendation of the Grand Jury addresses budgetary or personnel matters of a county agency or department headed by an elected officer, both the agency or department

head and the Board of Supervisors shall respond if requested by the Grand Jury, but the response of the Board of Supervisors shall address only those budgetary /or personnel matters over which it has some decision making aspects of the findings or recommendations affecting his or her agency or department.

Comments to the Presiding Judge of the Superior Court in compliance with Penal Code section §933.05 are required from:

Response Required:

Sheriff/Coroner: F.4.

Responses Requested:

CEO/IT: F.1, F.2., F.3., F.5., F.6., F.7., F.8.

Responses Required:

Sheriff/Coroner: R.3.

Board of Supervisors: R.2., R.3.

Responses Requested:

CEO/IT: R.1, R.2., R.4., R.5., R.6., R.7., R.8.

GLOSSARY OF TERMS

Agile Methodology	A methodology for project (particularly IT project) planning and implementation
ATS II (Assessment Tax System II)	Computer system used by the County Assessor's office for property tax assessment functions
Business Continuity	The ability of a business or organization to continue with important functions after a catastrophic disruptive event
CEO/IT	The Office of Information Technology within the County Executive Office
CIO (Chief Information Officer)	Typically the person in charge of Information Technology in an organization
Datacenter	A physical facility in which computers and telecommunications equipment is housed and operated
Deadband Zone	Defined in Managed Services agreements as a specified range of volume of Resource Units within which costs do not fluctuate
DR (Disaster Recovery)	Recovery of computer and telecommunications equipment after a catastrophic event that renders them partially or completely inoperable
EOC (Emergency Operations Center)	A pre-planned and configured location where recovery operations would occur after a major disaster
IT (Information Technology)	The use of computer and telecommunications equipment to store, manipulate, analyze, retrieve, and transmit data and information
IT Help Desk	A call center that receives and manages calls for service and problem resolution on IT related issues
Managed Services	A model for directing, monitoring and controlling services and costs of services delivered by an outside, organization

Microwave communication	A method of telecommunications utilizing the microwave range of the spectrum, over-the-air signals, and dish receivers
PTMS (Property Tax Management Systems)	A computer system development project undertaken jointly in the County by the Auditor/Controller, the Treasurer, and the County Clerk to upgrade and enhance property tax related functions.
Resource Unit	A designated category of service to be delivered by the County's outsource contractors under Managed Service agreements
RTO (Recovery Time Objective)	The amount of time that an organization determines is tolerable for a business function to be inoperable after a catastrophic disruptive event.
SAIC (Science Applications International Corporation)	Company with which the County has contracted for outsourced management and operation of the County datacenter, IT Help Desk and Desktop Support
Service Level	A specified measure of delivery of services, particularly IT services; these measurements are called out in Managed Services agreements
Waterfall project methodology	A methodology for project (particularly IT project) planning and implementation

APPENDICES

Appendix A - Sample of CIO Survey Questions

1. What is the approximate annual operating budget for all IT services in your county, including employee staff, contractors, hardware, software, data and voice networks, facilities, and other services?

2. Approximately how many on-line users are there of your systems?

3. To whom does IT report in your County? (Please provide an organization chart for IT, if available.)

4. What other oversight or review bodies look at IT activities in the County? (Please provide an IT Governance organization chart, if available.)

5. To what degree is your IT organization centralized versus decentralized in terms of acquisition and management of hardware and network infrastructure and software applications? Are there separate IT organizations in various agencies and departments?

6. To what degree are county agencies and departments allowed to contract for IT services from outside providers? Would your IT organization compete with outside providers for services to county departments?

7. What, if any, services does your organization provide to outside organizations, including other cities, counties, or jurisdictions, and private organizations? (This may include mutual agreements for backup and recovery.)

8. What, if any, major functions do you outsource (e.g., data center management, network management, help desk, etc.), and who are your outsource providers?

9. Which, if any, of your IT employee groups are unionized, and which unions represent them?

10. What, if any, recent outside audits or reports have been done on your IT organization, and are they available to the public?

Appendix B – CIO Survey Results

CIO SURVEY RESULTS

County	Reported Budget ($000's)	On-line Users	Reports to	Oversight bodies	Centralized	Agencies contract independently	Provide Outside services	Outsource Functions	Unionized	Outside Audits?
Orange	**$150,000**	**17,000**	**County Executive Officer**	**IT Exec. Council Technology Council Enterprise Archit Grp IT Investment Rev Bd**	**No, currently consolidating**	**Y**	**Y, Gov't and one private company**	**Y**	**Y**	**None outside, County Performance Audit 2009-10**
Alameda	$48,000*	9,500	Dir. Of IT / Regrastrar of Voters	Proj. Wkg. Group, Exec. Proj. Oversight Comm.	No, have central datacenter	Y	Y, Cities and counties, Superior Court	N/A	Y	N/A
Contra Costa	$25,000*	8,000	County Administrator	None	No	Y	Y, cities and other county law enf, 1 private	Apple desktop support	Y	Current audit of County finance system
Riverside	$205,000	18,000 + 5,000 part time	County Executive Officer	Technology Stds Oversight Comm	Currently consolidating, elected's refusing	Y, only with IT recom and TSOC approval	Y, Public Safety	None	Y	Y
Sacramento	$92,000	10,600	Deputy County Executive	Exec. Tech. Comm, Tech Advisory Group, (ERP) St. Comm., GIS St. Comm.	Y except electeds. All use central svcs	Y, electeds. Must consult IT	70+ local, state, and fed + spec. + 1 private	None	Y	Annual county financial audit
San Bernardino	$71,000*	22,000	Human Resources	Data Governance Committee, Functional Committee	Partial, large department have their own IT	Y, with IT consultation	Y	None	Y	Y - audit of IT in 2013
San Diego	$130,000*	16,500	County Administrative Officer	IT Mgmt Comm., IT Governance Group, Bus. Process Gov. Group	Y, except for dept applic mgmt, and Sheriff and DA	Y, must adhere to County IT stds	none	All - HP	none	none
Santa Clara	$76,000	15,000	Deputy County Executive	Five Committees plus Centers of Excellence	N, currently consolidating commodity svcs	N, discouraged with only one exception	Local, state, fed law enforcement	None	Y	Agency audits

*Does not include additional IT services - see Table 3

Appendix C – Agency Disaster Recovery Summary

COUNTY AGENCY DISASTER RECOVERY SUMMARY				
AGENCY	**PRIMARY APPLICATIONS PLATFORMS**	**CURRENT DR PLAN & RECENT TESTING RESULTS**	**FUTURE DR PLAN**	**NOTES**
Social Services Agency	Agency servers at County DC; Domain, Exchange servers at Agency DC	Case file replicated at Solano; have not tested transactions. Successfully tested e-mail, and configured other applications at Solano	Considering County Managed Services solution	DR of CA State systems and backup powere generator considered $ prohibitive
Health Care Agency	All platforms at County DC	Most recent tests at Solano did not complete successfully. No transaction applications at Solano	Will use software vendor Cerner for BHS, and software vendor Tech. Care for Jail Records, County for all else	BHS and Jail Records systems under development. Will test DR in 2014 after implementation
Sheriff-Coroner	Mainframe and Windows servers in Department DC	No off-site solution; replicate data and systems on second mainframe and servers on-site	No confirmed plans. Several short-term options being considered	Long-term solution awaiting definition of future application systems platform
Probation	All platforms at County DC	Most recent tests at Solano - connected and ran transactions, could not verify transaction output	Will use County Managed Services solution	
Auditor/Controller	All platforms at County DC	For CAPS, would use L.A. County, which uses same CAPS AIX system - no testing done. For Property Tax would use SunGard	Will use County Managed Services solution	Property Tax System previous under DR contract with outside DR provider. Issue interfacint with ATS II
OC Public Works	Agency has two DC's, with backup servers at Glassell	Use both Solano (for e-mail), and 2nd datacenter. Have tested.	Will use County Managed Services solution	
Assessor	ATSII production servers are at County DC	DR response would be to switch production to test servers at Assor location, or at an alternate location	No change	Test servers mirror prod config. Data connection in place. If not in July, RTO is months to produce roll