

**SUBMITTAL TO THE BOARD OF SUPERVISORS
COUNTY OF RIVERSIDE, STATE OF CALIFORNIA**

687



FROM: Riverside County Information Technology (RCIT)

SUBMITTAL DATE:
May 22, 2014

SUBJECT: RCIT Update on IT Consolidation within Riverside County – 3rd Quarter FY 13/14;

RECOMMENDED MOTION: That the Board of Supervisors:

1. Receive and file the attached consolidation update report from the Chief Information Officer (CIO)

BACKGROUND:

Summary

Attached is an update on the Consolidation Initiative of Information Technology within Riverside County. This report summarizes the County's progress with the consolidation effort and details some of the objectives and reasons for consolidation.

Departmental Concurrence

Colby Cataldi Colby Cataldi
Kevin K Crawford Kevin K Crawford
Chief Information Officer

FINANCIAL DATA	Current Fiscal Year:	Next Fiscal Year:	Total Cost:	Ongoing Cost:	POLICY/CONSENT (per Exec. Office)
COST	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	Consent <input checked="" type="checkbox"/> Policy <input type="checkbox"/>
NET COUNTY COST	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	

SOURCE OF FUNDS: N/A

Budget Adjustment: No
For Fiscal Year: 13/14 – 19/20

C.E.O. RECOMMENDATION:

APPROVE

BY: *Jennifer L. Sargent*
Jennifer L. Sargent

County Executive Office Signature

MINUTES OF THE BOARD OF SUPERVISORS

On motion of Supervisor Ashley, seconded by Supervisor Jeffries and duly carried, IT WAS ORDERED that the above matter is received and filed as recommended.

Ayes: Jeffries, Stone and Ashley
Nays: None
Absent: Tavaglione & Benoit
Date: June 3, 2014
xc: RCIT

Kecia Harper-Ihem
Clerk of the Board
By: *[Signature]*
Deputy

3 511 3-3r

- A-30
- Positions Added
- 4/5 Vote
- Change Order

Prev. Agn. Ref.:

District: All

Agenda Number:

2-25



RCIT

IT Consolidation Update

for

3rd Quarter

FY 13/14

From:

Kevin K Crawford

Chief Information Officer

EXECUTIVE OVERVIEW

This document provides an update to the Board of Supervisors on the County's 5-year information technology initiative, including: the history, current status, issues and milestones (see Section 1).

Over the past seven years of economic down-turn, every department has been asked to do more with less. In addition, during this period, technological advances were made and security became a much greater concern.

In an effort to continue core services, many departments deferred investment or took short-cuts with their information technology systems, hoping that better times were just around the corner. RCIT is working diligently to address some of the issues resulting from these realities and is developing systems that will avoid or reduce certain on-going systems costs. Some examples include: eliminating duplicative systems and costs through streamlining the County's numerous email systems and software applications; gaining efficiencies through the consolidation of information technology staff across the County; implementation of several new initiatives, such as, the Converged Network Project (CNP) and a Tier 3+ data center, with built in redundancies for continued operation in the event of power-loss or other failure (see Section 3).

Although there are many challenges associated with such an enormous undertaking, RCIT takes great pride in highlighting some successful outcomes. For example, the centralization of GIS support through an Enterprise License Agreement with ESRI. RCIT was able to negotiate the best price after getting the involved County departments unified as one group. In addition, the County's financial system operates on the PeopleSoft Financials application, which was recently upgraded to version 9.1. There were over 1,000 customizations associated with the application, causing the system to operate inefficiently. RCIT removed over 900 of these customizations, enabling greater application effectiveness and expediting future upgrades. Finally, as of this writing, the IT staff consolidation is almost complete.

In aggregate, the consolidation initiative provided approximately \$3 million in savings, to date. However, this does not mean every department consolidated saw significant savings (see Sections 2.3 and 3.5).

The strategies and efforts reflected here and in the following pages emphasize RCIT's overarching goal of a customer centric public service that is better, faster and fiscally prudent through technology.

Table of Contents

1. Consolidation Initiative History to Date.....	4
1.1 Background.....	4
1.2 Consolidation Form 11 Listing.....	5
1.3 Departmental Status List.....	6
2. State of County IT versus Strategic Direction.....	7
2.1 Beginning State of IT.....	7
2.2 Current State of IT.....	9
2.3 Strategic Direction.....	11
3. Advantages and Benefits to the County.....	13
3.1 Address County Business Requirements with Comprehensive Solutions	13
3.2 Eliminate Single Points of Failure	15
3.3 RCIT Initiatives to Reduce Risk and Enhance Security	16
3.4 Maximize Capability through State of the Art Technology.....	17
3.5 Reduce Technology Costs	19
3.6 Riverside County as a Technology Leader	22
4. History of Consolidations in County Governments.....	24
4.1 General Trends.....	24
4.2 State of California... ..	24

1. Consolidation Initiative History to Date

1.1 Background

RCIT began the process of working with Departments in March of 2012 to assess the feasibility of consolidating technology services county-wide. RCIT did a budgetary review of technology expenses using standard savings percentages to estimate the possible savings of the effort. RCIT reported to the Board that the County could achieve approximately \$9 million a year, after completion of the 5-year Consolidation Initiative.

After a review of estimated savings and the two consolidations of ROV and TLMA, the Executive Office requested RCIT to move forward with doing a full assessment of all departments. RCIT began that process in July 2012.

Prior to the kick-off of the Assessment Process, the CIO met with each department head to discuss gathering data, details related to the assessment process and preparation of the Technology Service Agreement (TSA). A schedule was drafted and modified as necessary to meet the department's business needs and the deadline of this initiative. The schedule for the first phase of the Consolidation Initiative has been changed several times. It is currently scheduled to be completed by June 30th 2014.

RCIT began working with other departments in August 2012. The tentative schedule consisted of initiating four department assessments each month through May 2013. RCIT continues to work with county staff to identify specific departmental needs and ensure that the recommended TSA's are drafted accordingly. Each department received a specific TSA to meet their business needs, this has never been a rudimentary or "one size fits all" approach.

The Consolidation Initiative has been reviewed by the Board through Form 11 submissions several times and requested adjustments have been incorporated as appropriate (see Section 1.2).

RCIT has worked to identify savings and consolidation areas with all County Departments, Agencies, and Special Districts. 27 departments that report to the County Executive Officer (CEO) have or are working towards a TSA including consolidation of staffing. To date, 24 of the departments reporting to the CEO have signed a TSA and have or will be consolidated. Several departments led by an Elected Official have agreed to network support agreements for shared support following the Converged Network Project.

Current High Level Consolidation Initiative Plan

<u>Phase</u>	<u>Assessment Process</u>	<u>Consolidations</u>
1 – Staffing	April 2012 to June 2014	April 2012 to June 2014
2 – Infrastructure	July 2013 to June 2015	July 2014 to June 2016+
3 – Applications	July 2013 to June 2016	July 2015 to June 2017+

1.2 Consolidation Form 11 Listing

RCIT Budget Adjustments Related to Assuming Responsibility of Technology for the Transportation & Land Management Agency (TLMA)	July 3, 2012	3.25	
Chief Information Officer (CIO) 90-day report and updates to Board Policy H-11	April 10, 2012	3.35	"Assessing current environment and restructuring the organization to meet technology business needs County-Wide."
Receive and file the Riverside County Technology Services (RCIT) strategic Plan FY2013-2014	January 15, 2013	3.11	"meet the County Executive Officer's goal of Countywide Consolidated Technology Services by FY2014-15."
Responses to questions raised during the presentation of RCIT's 13/14 strategic plan	January 29, 2013	3.32	This document addresses some of the questions/answers in regards to the CNP and Consolidation Initiative and how it "will achieve the goals of best practices and savings."
Monthly Information Technology Update	June 25, 2013	3.44	At the time of this update, a June 30th, 2014 completion date for Phase 1 of the Consolidation Initiative is set.
August 2013- Information Technology Update	August 20, 2013	3.72	There had been 34 assessments of individual departments. Was working on potential Service agreements.
1 st Quarter 2014 – Chief Information Officer Update	January 28, 2014	3-51	As a result of transferring the staff of 20 consolidated departments to RCIT, departments realized a savings of \$2.3 million in fiscal year 2013-14.

1.3 Departmental Status List

AS OF: 4/15/2014

Oasis	Signed & Consolidated	
TLMA	Signed & Consolidated	
ROV	Signed & Consolidated	
Agricultural Commission	Signed & Consolidated	
County Counsel	Signed & Consolidated	
Executive Office	Signed & Consolidated	
Parks	Signed & Consolidated	
Purchasing	Signed & Consolidated	
Human Resources	Signed & Consolidated	
RCA	Signed & Consolidated	
Veterans Services	Signed & Consolidated	
EDA	Signed & Consolidated	
Public Defender	Signed & Consolidated	
Environmental Health	Signed & Consolidated	
Community Action Partnership	Signed & Consolidated	
Office on Aging	Signed & Consolidated	
Public Health	Signed & Consolidated	
Animal Services	Signed & Consolidated	
Waste Management	Signed & Consolidated	
RCRMC	Signed & Consolidated	
Mental Health	Signed & Consolidated	
Clerk of the Board & Board of Supervisors	Signed & Consolidated	
DCSS	Signed & Consolidated	
Flood Control	Signed	Consolidation scheduled
Health Care Systems	Signed	Consolidation scheduled
Probation	Signed	Consolidation scheduled
DPSS	Signed	Consolidation Scheduled
Crest	Optional	
Fire	Optional	MOU for transfer of Network & Telephony under review
Sheriff	Optional	Agreed in Principle to CNP Co-Mgt Agreement
Treasurer/Tax Collector	Optional	Agreed to CNP Co-Mgt Agreement
Auditor-Controller's Office	Optional	Agreed to CNP Co-Mgt Agreement
Assessor-Clerk Recorder	Optional	Agreed to CNP Co-Mgt Agreement
District Attorney	Optional	Agreed to CNP Co-Mgt Agreement

2. State of County IT versus Strategic Direction

2.1 Beginning State of IT

The state of IT within the County at the beginning of the Consolidation Project can be best described as “Segregated at the Business Level” and “Federated at the Core”.

The fact that every department implemented and managed the infrastructure and application environments within its sphere of influence, independent to what was happening elsewhere in the county, shows complete segregation of the systems. Departments chose applications to meet their need with little to no consideration of what or if any other departments had implemented or needed a similar solution. This resulted in several duplicative systems and costs. For example:

Email – The Board required that all departments migrate to the Microsoft Exchange environment in 2009 through Board action. The requirement was to standardize throughout the County. However, there are still two large departments that are on GroupWise and we now have over 20 individual email systems within the County requiring their own infrastructure, support staff and maintenance.

Business Systems – Many County departments have similar business requirements. Today's applications can handle the one-offs of business requirements with internal administrative settings. Separate applications, infrastructures and support are not required. There are many examples of areas where County Departments have built siloed systems that could meet alternate department requirements with much less change than building an entirely new system. Duplicative systems include Electronic Health Records, Document Management, Procurement Tracking, Asset Management and the list goes on.

Shadow Financial Systems – The County has spent many millions on implementing the PeopleSoft System within the County. Departments have spent many millions creating shadow financial systems (to date we have found 114). Some of these shadow systems meet real and appropriate requirements. Many others are there because someone was unwilling to change the way, “it's always been done.” RCIT itself is culpable in this and we are removing our shadow system and moving to the PeopleSoft tool available to do this work.

Legacy Systems – A legacy system, as defined by Wikipedia, is an old method, technology, computer system, or application program. Whether a process, system, or piece of hardware, Riverside County is rife with legacy. These systems performed and may still perform a critical process to meet a business need. However, over time the cost to maintain these systems is higher and in many cases introduces increased business risk. These systems usually:

- have one or two staff that understand and can support them, but if the staff is not available (left County or otherwise) any upgrade, support or maintenance of the system can be very expensive or even impossible to find;
- Require other system around them that are also old and/or outdated, which further increase cost and risk to the County's enterprise environment; and
- Require expensive manual or application integrations to utilize the data elsewhere in current systems.

We definitely are the "haves" and the "have-nots", with departments at very different levels of capabilities. The fact that electronic services vary, confuses requesters from other areas of the County and our constituents. The differences make it difficult to impossible to share data, systems, ideas, and costs. More importantly, since all departments still share a core connectivity, a department that has funding for the best security is still very vulnerable to the vagaries of the departments that don't. For example:

Cross-Infections – We have had several instances in the recent past where a department has had a security problem (virus, malware, etc.) that has affected adjacent departments, critical enterprise systems or the core network, because the security was not up to date, misunderstood or just not happening.

Black Listed – Because of lax security in different areas of the County, the County's internet connections themselves have been blacklisted as SPAM sites. This has happened more than once in 2014. It requires that the appropriate external organizations be contacted and reasons/ mea culpas given before our ability to utilize many of our services and systems, which use the internet to function, can once again operate normally.

XP Workstations – The Information Security Office has found hundreds of XP machines throughout the County. Microsoft plans to stop providing for security updates to this operating system on April 14th 2014. Hackers are salivating awaiting the date and are ready to utilize this vulnerability and seek any valuable information or cause havoc to the networks that still run on these workstations. The problem is not just XP workstations themselves, as they are actively on our network and provide access to all internal systems, if not remediated.

County Departments and RCIT have identified many areas of possible consolidation for the next phases of the Consolidation Initiative (Infrastructure and Applications). The areas identified create barriers between the departments due to disparate systems. The result is systems that prevent/hinder the sharing of data, require multiple hardware/application platforms and support teams, and increase the risks associated with technology.

Overall, the County has been spending more than necessary to create a variety of systems that only met the needs of a segment of the County and sometimes even just a small portion of a department. Our vendors have enjoyed the ability to sell to 33 different entities, and we in many cases do not even get the best pricing for the overall spend of the County. It is understood that County Departments have been spending to provide the best support to their business. RCIT will continue to ensure departmental objectives are a priority, and are met, while driving the overall county IT spending down. Key areas have been identified to start the transformation and RCIT will work with Purchasing to aggregate disparate contracts and drive to the lowest possible cost.

There are great success stories within the departmental IT groups. We seek these great ideas and we want to learn from and replicate those throughout the enterprise. In a more cliché verbiage, *we want to keep the best and leave the rest.*

2.2 Current State of IT

In January 2013, the Board voted unanimously that 27 departments reporting to the County Executive Officer (CEO) were mandatory for consolidation and departments with Elected Department Heads were listed as optional. The first staff consolidated to RCIT was the ROV staff. ROV IT joined RCIT in March 2013, followed quickly by TLMA in May. To date, all 27 of the departments reporting to the CEO have signed a TSA and have or will be consolidated. To date with the consolidation, a total of \$3.9 million in savings were found in reduced charges to the consolidated departments.

Costs formalized in the TSA for each department, include savings for most and added costs for others. As the savings/costs were the difference between the current budget and the "to be" charges from RCIT, RCIT requested no information on where or how any savings were utilized, as these were business savings provided to the business itself. Reasons include:

- One department was severely understaffed and had hardware that was barely functional. RCIT was able to use its own savings to replace the hardware and provide enough staff support to get the department's technical footprint back to an operational form. The Department is experiencing a cost increase. It also has a more stable and supportable environment, making it easier for them to meet the demands of the services they provide.
- A few departments chose to use some of the found savings to procure more services to meet business goals that had gone unanswered or remained on their wish lists. Websites, additional application licensing and new services/systems have been requested.
- Other departments chose to use some of the found savings to procure more staffing services to ensure that their current staffs had the greatest chance to avoid staff reductions.

The Board of Supervisors and the Clerk of the Board have agreed to a consolidation TSA. Several other departments lead by an Elected Official have agreed to a support agreement on the Converged Network Project.

At this point of the Consolidation Project, we are firmly in the grey area between where we were and where we want to be. We have made many moves towards the Strategic Direction, but have not completely let go of the past. This means that in many cases we have to maintain the old system through the implementation of the new. Many of the things that need to be done require sitting down together and discussing and letting go of the past for the betterment of the future. We may need to set up new foundational systems, change age old processes that no longer serve as they once did and change both the who and the how of technological support. We have had successes already and more are on the way.

Here are a couple examples to further explain the above:

New Foundational Systems – Not every system can just be removed and replaced in the same step. Before many of the duplicative systems can be dealt with, a foundational replacement must be procured and implemented. The upfront costs for these foundational systems are above the on-going costs of the systems they will replace. And though most will deliver savings in the future all are an extra cost today.

Process Changes – The modifications within the PeopleSoft System did many negative things: significantly increased the costs for upgrades, as every modification had to be tested against every change; covered new capabilities of the new versions being deployed and added thousands of staff hours to the support and maintenance. This same problem is replicated in numerous systems throughout the County.

RCIT and the EO continue to keep the pulse of what is going on within the technical arena for other similar agencies and in general. We had a recent conversation with Gartner and Gartner provided a written response to our conversation on our direction and the Consolidation Project. The following are a few quotes from that written response:

- “Data center consolidations are a worldwide trend – especially in the public sector, including the US Government, Canada, Australia, UK, Singapore, Thailand, dozens of state governments and hundreds of municipalities.”
- “The greatest benefit gained has been in the flexibility of IT in supporting the end customer. Through consolidation IT becomes more responsive, operationally more cost effective, and much more flexible towards rapid change to support product and application delivery.”
- “The primary reason these projects fail are political due to internal infighting over who should have control – oftentimes due to a “perceived” rationale that (centralized) IT will not be as responsive as departmental IT is.”
- “Cost savings due to the reduction in redundant systems, duplicative support structures, software and hardware use/contracting efficiencies and energy efficiencies can be dramatic, but are difficult to quantify due to a lack of existing detailed budget information at departmental levels.”

Though we are currently in the grey between where we were and want to be, we are on the right path. This multi-year process will help move Riverside County to meet the goal of:

***“Customer Centric Public Service that is Better,
Faster and Fiscally Prudent through Technology.”***

2.3 Strategic Direction

RCIT is working diligently to identify areas where efficiencies can be achieved and resources leveraged, while improving customer/constituent services and the County's business operations. The consolidation initiative is pooling resources (staff, infrastructure, equipment and money) to meet countywide objectives, while keeping Department business needs the priority.

In addition to creating efficiencies and saving money, advantages to consolidation include:

- Enhancing the county's ability to develop and cross-train staff;
- Leveraging institutional and professional knowledge to serve the county as a whole, especially in succession planning, where it's critical to develop a workforce that has a shared knowledge of the county's numerous applications and programming code;
- Increasing staff skills through collaboration and training, which increases the level of expertise of the overall pool of IT professionals;
- Affording staff the opportunity and ability to work in multiple environments, which strategically strengthens the county's ability to serve and support multiple customers with a better trained workforce;
- Deploying staff from strategic locations throughout the county in order to support multiple departments, instead of one or two departments, which will increase service levels and minimizing travel costs;
- Increasing the county's purchasing power and maximize the efficient use and distribution of software licenses;
- Standardizing and consolidating duplicate IT operations, platforms, applications, and operating systems. For example, the County currently has 20+ individual email systems. These duplicate systems and computing environments require a complete set of hardware, applications, and staff to support each system;
- Streamlining the various application versions loaded throughout the County to improve patch levels, access and security; and
- Centralizing the administration of GIS efforts through Enterprise License Agreement with ESRI while maintaining departmental autonomy.

RCIT continues to work with County Departments to implement phase 1, the consolidation of staffing. As a result of transferring the staff of 20 consolidated departments to RCIT, departments realized a savings of \$2.3 million in fiscal year 2013-14. In addition, since project inception the cumulative savings for departments in fiscal years 2012-13 and 2013-14 is approximately \$3.0 million.

Phase 1: Estimated Savings Calculation

$$\left[\begin{array}{c} \text{Department Technology Spend} \\ \text{minus (-)} \\ \text{TSA Costs} \\ = \\ \text{Phase 1 Estimated Savings} \end{array} \right]$$

Phase 2 of the consolidation effort pertains to infrastructure, and will commence in April/May 2014. It is anticipated that full implementation will take approximately 2 years. The Converged Network Project (Core and Telephony) and the Data Center purchase are prerequisites for this phase, in order to provide the central connectivity and locations for the following projects:

1. *Enterprise Storage.* Storage systems that meet trusted system requirements and provide global storage to county systems (see Section 3.1 bullet – Just in Time versus All at Once).
2. *Email Consolidation.* RCIT is already working with the email systems that have come with those departments that have already consolidated.
3. *Tier 3 Data Center:* The new Data Center provides a much higher level of redundancy or survivability than other data centers within the County. Relocating the servers and other hardware to the County's Tier 3 Data Center will protect the equipment and provide a secure environment for the data/system.

Phase 3 of the consolidation pertains to applications; it will commence in July 2015. Implementation of this phase is anticipated to continue for two or more years. During the assessment phase, many applications were identified for consolidation. These applications can be managed and supported more efficiently if done in concert at one location, rather than piece-meal at many locations. An example of this efficiency is the financial system, linked through well over 100 shadow systems, which reports data from the PeopleSoft system.

Consolidation phases 2 and 3 are pivotal pieces in eliminating and minimizing redundancies in applications, infrastructure, licenses, maintenance, etc. Full countywide implementation of these phases will show significant savings, currently estimated at an additional \$9 million annually (phase 2 - \$4 million and phase 3 - \$5 million).

Phase 2 & 3: Estimated Savings Calculation

$$\left(\begin{array}{c} \text{Total Area Technology Spend} \\ \text{times (X)} \\ \text{Industry Standard Savings Factor} \\ = \\ \text{Phase 2 \& 3 Savings} \end{array} \right)$$

Projects within these phases will result in overall savings, as described above. However, it should be noted that some may increase costs and others may not show savings until after implementation. Specific savings and costs will be shown with each project, during review and approval. The savings does not take into account new projects, initiatives or upgrades that we may be asked to accomplish (see Section 2.3 and 3.5).

The CIO is in the process of bringing in a consultant to help him review the myriad of data coming in through the consolidations and the new staffing. The consultant will assist in the updating of strategic and project plans. The consultant will also work with the governance committees set up per Board Policy H-11 to continue RCIT's work with the business communities so their voices are heard in the strategic planning as it moves forward. The reviews will ensure that the strategic directions being recommended to County Departments, the Technology Steering & Oversight Committee, Executive Office, and the Board of Supervisors have been thoroughly validated. The end result of this work will most likely include changes to county policies, IT organization, projects, strategies and the plans that govern them.

3. Advantages and Benefits to the County

3.1 Address County Business Requirements with Comprehensive Solutions

Consolidation helps to improve communication and personal interactions between County business and technology professionals. It enables our resources to work together collaboratively as opposed to individually in providing services to meet County business needs. Consolidation enables County teams to focus on working together to deliver comprehensive technology solutions to collaboratively satisfy our business requirements. This collaborative approach based on consolidation improves past operations that forced business technology solutions through silos of narrowly individualized, overlapping interests driven by competition, isolation, conflicts, and disjointed opposing priorities.

In pre-consolidation operations, County departments performed information technology (IT) operations in parallel, often with overlapping services, and often without consideration of impacts to the County as a whole. County business technology requirements were traditionally not considered based on the County as an enterprise, but instead were isolated to the specific needs of individual departments.

Traditionally, the quality of the resultant technology deliverables has suffered as a function of the isolated skills, fiscal profile, and technical acumen of individual departments. Some may have done well, based on their individual ability to do so. Others have not done well. They have affected the County enterprise with vulnerabilities, incompleteness, ineffectiveness, incompatibility, and costly technological burdens.

Business requirements precede and establish the basis for any resultant technical solutions. Business drives technology, not vice-versa. In pre-consolidation operations, wide variations span the spectrum of business requirements across County departments. Some departments define their respective requirements well, others do not. Specifications for business requirements have often either not occurred or have represented the silos of specific departmental business interests without consideration of County interests overall.

Consolidation offers the County with a timely opportunity to change. Technical resource consolidation enables renewed direction and synergistic dialog between business and technical resources. Technical teams can now focus on providing comprehensive solutions to County business requirements based on the collective knowledge of County technical experts and the resources available to them. Those resources no longer have to solely bear the responsibility for providing resolutions on their own. Instead, they have the benefit of sharing subject matter expertise across a consolidated team empowered with collective insights to provide comprehensive technology solutions for more clearly defined County business requirements.

The County is already receiving the benefit of consolidation across business and technological fronts. Examples include:

- **Business Technology Governance:** Consolidation encourages business technology governance, advisory support, and collaboration. RCIT joins with business leaders across the County to contribute in collaborative dialog to set business technology direction. Examples include the Technology Standards and Oversight Committee (TSOC), Enterprise Solutions Oversight Committee (ESOC), and Technical Advisory for Business Systems (TABS) Council. The former two committees govern the County's technology direction in concert with

County business interests. The latter fosters open, collaborative dialog to resolve the County's BUSINESS NEEDS through efficient and effective technology applications.

- **Consolidated Enterprise Technical Teams:** RCIT consolidates technical resources with skills that serve multiple departments spanning the County enterprise. Through consolidation, these resources efficiently provide comprehensive and effective technology solutions based on collective expertise spanning the County enterprise. Teams are cross-trained for backup and resilience within their domains of expertise. Examples include systems administrators, network administrators, helpdesk technicians, database administrators, and more.
- **Consolidated Departmental Technical Teams:** RCIT consolidates technical teams to assure responsiveness and service to County business departmental operations. Individualized Service Level Agreements identify specialized needs for each department. RCIT departmental teams focus on specialized service to satisfy those agreements. The technical teams assure the proficiencies needed to meet specific departmental business requirements.
- **Just in Time versus All at Once:** We have a habit of buying everything we need for a system at the beginning, rather than adding on as needed. Sometimes, this is because of the type or way a project is funded. A specific example is storage, where the norm is to buy all that is needed with the base system and then allocating that storage space to the project that purchased it. The storage then sits and waits for use and sometimes is not used prior to the systems' retirement. This means that we pay for maintenance, licensing, support and utilities for an available resource that may sit for years allocated but unused even when another system/department could effectively use it. This requires a process change to buying storage as an Infrastructure Service to support specific storage needs, ensuring that storage capacity does not exceed 180 days future requirement and is shared across the enterprise.

3.2 Eliminate Single Points of Failure

A single point of failure (SPOF) is a potential risk posed by a flaw in the design, implementation or configuration of a circuit or system in which one fault or malfunction causes an entire system to stop operating.

RCIT found applications that controlled critical financial, legally mandated, and other core services to be in SPOF vulnerabilities. Specifically, the following SPOF types were found in the County environment:

- **Critical Department Applications not backed up or redundant:** This was the widest ranging of the application issues. It is unknown how many applications may have been lost because of inadequate redundancy or backups. However, if a failure occurs on an application that is not backed up, both the application and data it contained would need to be recreated from scratch, with associated costs.
- **Single Line in and out of the Server Location:** Several critical services were found with single in/out connectivity. This means that the critical services have no redundancy of connectivity like they would experience in a fully operational Data Center. Outages have been experienced with these applications because of outages on the single connection.
- **Inappropriate Server Locations:** Servers running departmental business apps were found under staff desks, in broom closets and other unsecured areas. One department knew that the room that they had their servers in would overheat every day that the temperature reached 90 degrees outside (by the way, they were happy to have them moved to the central Data Center). These locations identify an inability to meet the basic requirements of a computing environment. Issues that can and will occur are outages, slow responsiveness, loss of data and lessening of the hardware's service life (hardware won't last as long as it should).

The Board approved the purchase of a Tier 3+ Data Center. It is specifically designed to provide the needed redundancies of power and connectivity. It also provides for proper cooling and clean sustained power (commercial, uninterrupted batteries and generator). These services help computing environments run faster, more efficiently and last longer.

3.3 RCIT Initiatives to Reduce Risk and Enhance Security

RCIT has begun or identified many initiatives to reduce risks found during the assessments and reviews from the ISO. The first step in securing any environment is knowing what the vulnerabilities are by actively seeking them out. The second step is making security and risk avoidance an integral part of all projects from the outset. The following projects include security and risk avoidance to enhance our systems moving forward:

- **Consolidated Network Project (CNP):** Part of the CNP effort is to ensure that standard network security controls are put in place across the Riverside County Enterprise Network. Having consistency and centralized management of security controls will allow for easier risk and incident mitigation.
- **Three Tiered DMZ:** A network platform for all county hosted web sites. The installation and migration of your websites to this configuration will reduce the probability that if someone gets unauthorized access to your county website that they will not have unrestricted access to your data that the website provides to other departments, vendor, partners or constituents.
- **Certificate Services:** A registration tool to ensure that any device; computer, laptop or smartphone; that is connected to the county's CNP wireless network has been properly registered. This will help prevent not only unauthorized access by someone within range of the CNP wireless connectivity but will also prevent someone from using your username and password on a computer that you and your department have not authorized.
- **Computing Standards:** RCIT will be working with the Information Security Office (ISO) and each department to determine computing platform standards. Standardization is a foundation for ensuring that the county is strategically positioned to take the most advantage of pricing discounts and of minimizing system management overhead and cost. Having standard will also allow for focused training and focused risk mitigation; again driving down overall investment and long term costs.

RCIT is making security and risk avoidance a required step in the Project Management Process, as we begin or develop new initiatives. RCIT works with County Departments through our governance committees and through direct contact to ensure that County Departments are aware of security/risk and system availability proposals and their impacts to the business. This allows for a balanced effort moving forward.

3.4 Maximize Capability through State of the Art Technology

Consolidation enables the County to leverage its power as a large enterprise to achieve the highest levels of business and technological proficiency. The County can assure this achievement through the County's timely investments in state of the art technologies, and sustained maintenance.

The business cases for these investments are justifiable exclusively with consolidation. The County cannot substantiate alternative business cases for deploying significant advanced technologies on smaller scales within departmental silos of business operation. Consolidation across the County enterprise presents the strongest supporting justifications to maximize the value proposition of these investments.

On smaller scales, technology advancements cannot achieve the most beneficial impact. Instead, their effect is isolated, inconsistent, and minimalized at best.

Incompatibilities and inefficiencies exist with factionalized departmental deployments. Deployments across non-consolidated departments often have inconsistencies that prevent them from working congruently to maximize their benefit. Maintenance of these segmented deployments is costly subject to the terms of small scale agreements with no economy of scale. Vendors use this condition against the County by offering inconsistent terms on contract agreements. Certain departments benefit more than others from these inconsistencies due to the scale of purchases they are able to make. The contractual business administration overhead to the County is significant based on the numbers of inconsistent agreements with varying terms and conditions. The costs to the County for maintenance and support of antiquated, inconsistent systems are extremely elevated due to their inherent specializations, overlaps, complexities, and nuances.

Consolidation simplifies this randomized method of business by centralizing all associated details. The County can utilize its volume of purchasing power to assure terms most favorable to the County from business and technological perspectives. Examples include:

- Volume discounts
- Favorable technology refresh cycles
- Master purchase / license agreements
- Substantial incentives for training, support, maintenance, upgrades
- Vendor incentives to demonstrate market dominance by offering the County State of the Art technologies at County-level volumes with significant considerations in pricing, service, and associated factors

To proof this assertion, the County can review best practices across large enterprises in both public and private sectors. In case after case, the facts demonstrate that County-sized enterprises cannot achieve proficiency with segmented, individualized deployments of small scale sub-optimal technologies considering their inherent inconsistencies, overlaps, and complexities. Some examples of the County's use of such technologies include:

- Departmental dependence on use of paper (instead of efficient electronic systems)
- Departmental use of substandard data centers (instead of a properly outfitted, survivable data center or qualified service)
- Departmental dependence on manual workflows and approvals (instead of automated workflows and electronic approvals)
- Departmental storage of hard copy records (instead of electronic trusted systems)

Instead, the most effective and efficient operations exist in enterprises that assure their proficiency by optimizing business processes through state of the art technologies that assure standardization, consistency, resilience, optimization, scalability, maintainability, and more. The County is advancing into this stage with investments and deployments of state of the art technologies such as:

- Integrated digital voice, data, and video communication through the Converged Network Project (instead of costly support of end-of-life analog telephony and telecommunication systems)
- Advanced Constituent Relationship Management services with web access and automated workflow (instead of resource intensive attendant-based constituent services and associated manual workflows)
- Advanced Human Capital Management services of Talent Acquisition Management (instead of resource intensive, error-prone manual recruitment processing)
- Advanced Electronic Health Record system services (instead of paper-based medical records and manual procedures)

Consolidation enables the County to maximize its operational proficiency through successful deployments of state of the art technology.

3.5 Reduce Technology Costs

WHAT THE EXPERTS SAY...

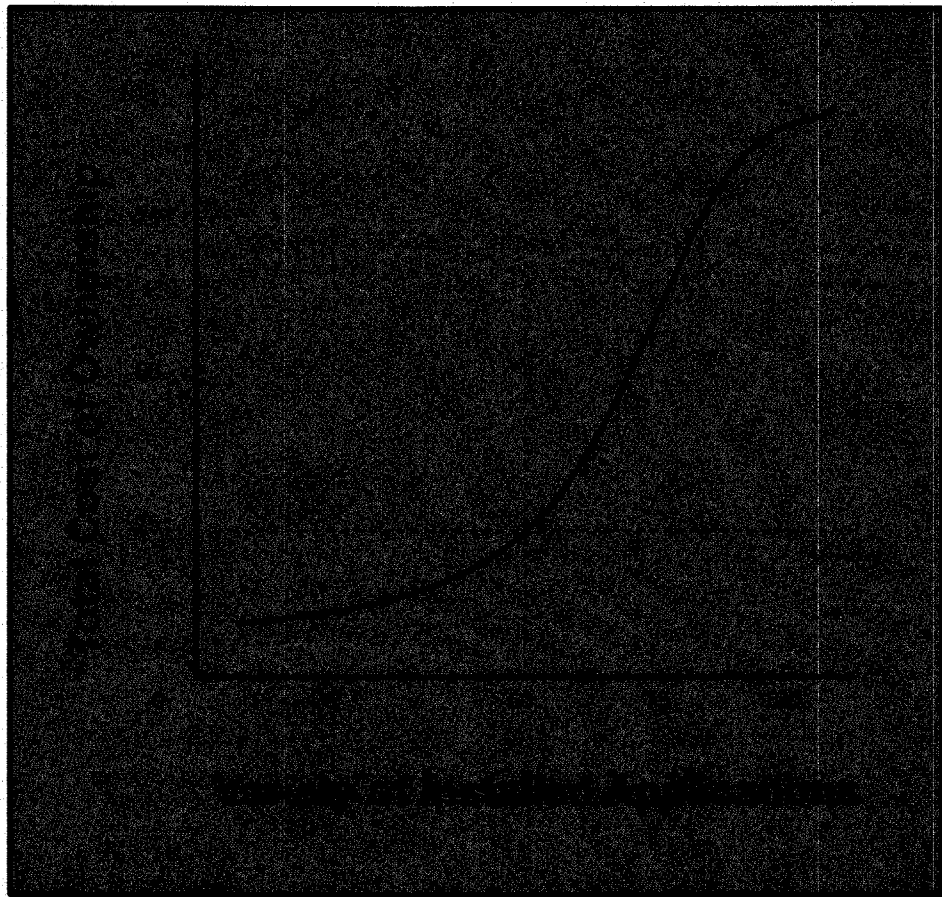
The savings will come from removing the variety of technology from the electronic footprint across the County. Experts state that consolidations of dissimilar technical environments will result in significant savings. On average, they show that variety in a consolidated environment is changed as follows:

- 50% of the environment is consolidated to enterprise services and platforms;
- 30% of the environment will need to remain as legacy; and
- 20% of the environment should be retired.

The savings for Phases 2 & 3 listed in the table above we utilized averages of 40/50/10 for a more conservative estimation.

It is also clear that savings from a consolidation are not linear (meaning that each effort will not offer the same savings). As depicted in the figure below, 75% of the savings can be obtained by removing 50% of the variety in the consolidated environment (as shown in the figure below).

TCO Savings while reducing Variety of Installed Applications



The savings are not experienced until a threshold of the investment is met. That critical threshold for Riverside County includes: new facilities, connectivity, and application platforms (computing infrastructure). The new facilities have been purchased and improvements are being addressed. RCIT is in the process of identifying requirements for the other two thresholds and will appropriately address them through the 2nd and 3rd phases of the Consolidation Initiative. In future years as systems are retired, replaced or added, savings and cost avoidance will accelerate through the end of those phases.

Though the percentages to identify savings are averages, they depend on several things:

- *Continued and consistent Executive Support*
 - Support must be firm even with the expected complaints.
 - Exceptions must be kept to minimum.
- *Seeking “to be” rather than admiring “what was”*
 - Keeping the eye on the prize or goal is more important than keeping old outdated processes and systems.
 - The “what was” may not even be required today.
- *Understanding that change will not come at once, for free or without issues*
 - All the savings and changes will not come at once, it will take time – we estimate we are on a 5 year change process.
 - There will be things that cost to change a standard or build a foundation for the future. The savings is based on looking at the estimated costs of continuing to do the same thing versus the consolidation changes.
 - Not everything will go as expected and there will be problems. Change is an imperfect process, even with the most well defined goals.

Gartner reports that sometimes Consolidations can be viewed as a failure because of the following:

- (as defined earlier in the document) change engenders fear, uncertainty and doubt;
- not everyone will see the goals clearly;
- not everyone will understand the reasons for the specific change they are experiencing; and
- it is common to perceive that things get worse before they get better.

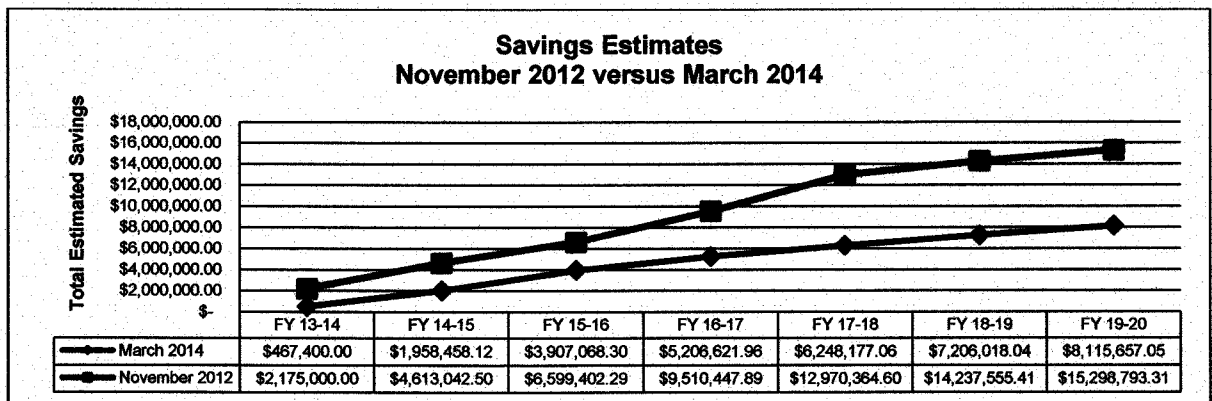
Experts teach us that successful organizational change requires increased communication on:

- where we are,
- what we are doing, and
- why we are doing it.

Our Internal Estimates...

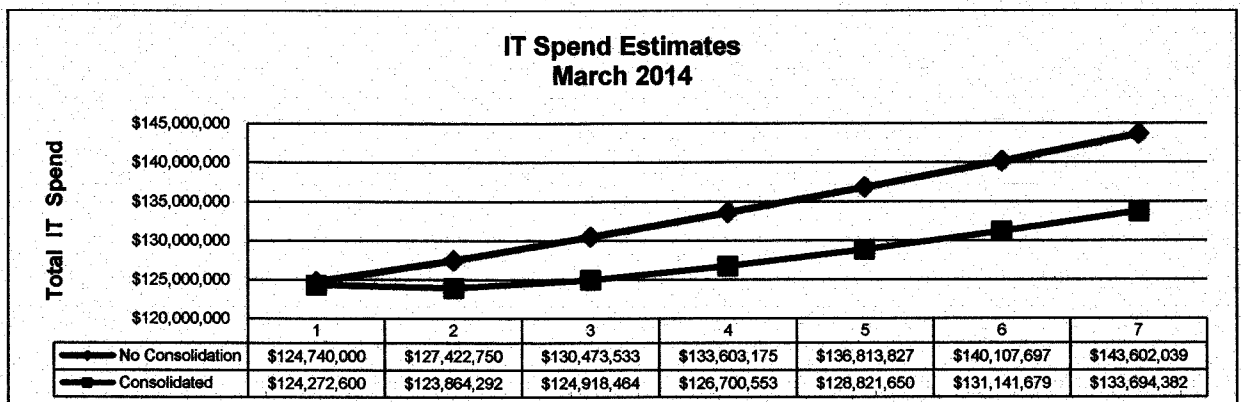
The graph that appears below illustrates the change in respect to the Initiative savings compared to the estimates at the onset of the initiative in November 2012. The reasons are:

- Changes in the scope of the consolidation (departments and systems consolidated);
- Real life issues (like the Indio move) impacted the project in different ways;
- New projects were added during the first phase (and will continue) that change projections going forward;
- As assessments were completed more realistic estimates could be garnered from the data obtained; and
- Technology has continued to change during the implementations of approved projects that were folded into projects to optimize the outcomes.



The graph below illustrates the current and projected savings from the Consolidation Initiative. The findings are:

- Savings increase year over year;
- Though the IT Spend for the County continues to rise the growth is slowed by consolidation;
- We have included some known annual “new” project IT spend in the consolidation estimate;
- New projects, initiatives or upgrades will increase technology spend (costs) in the future;
- Unknown issues, unplanned outages & other problems may also increase costs; and
- Current savings projections are consistent with expectations.



RCIT will continue to update estimates as required with situational changes and provide appropriate updates.

3.6 Riverside County as a Technology Leader

To reach the goal of “**Customer Centric Public Service that is Better, Faster and Fiscally Prudent through Technology**” one is not looking to be a technology follower. To draw in technological and scientific businesses, host entrepreneurs, and retain our technical graduates we must set the County on a path to be a leader in those areas. With that we will attract the same.

The Board has approved changes to the Information Technology Environment within the County for many reasons, chief among them was to move the County forward in an area that we were not leaders in.

Bright Spots – YES.

Issues – also YES.

Doable – absolutely YES.

The Board has approved the Consolidation, a \$19 million upgrade to the network and telephony environments, a new Departmental Building for the consolidated RCIT, and a new Data Center to support the above. Much of the projects approved are designed to save County costs enough to pay for themselves and more. We have gone into depth on the consolidation. We now look at a few supporting projects:

Converged Network Project (CNP) – The CNP is combining voice, data and video over a single physical network, reducing operating costs through the elimination of network equipment and consolidation of voice and data circuits. This new system is designed with geographical redundancy for critical voice applications and will provide a robust, high availability system through the standardization of enterprise voice and data network services. Included in the project is the implementation of Wireless LAN at locations of 5 or more county staff, providing greater work efficiency and mobility for County users.

Over 500 County locations will be migrated to the new system with a phased implementation. To realize the quickest savings, County locations currently on the Aastra Telephone System will be migrated first, with locations served by other telephony services addressed afterwards. Over 21,000 new VoIP telephones and 30,000 network ports will be deployed in the project. The project commenced in February 2013 and Phase 1 is expected to be completed in 2014 (the Hospital will be completed in 2015).

Riverside County Innovation Center (RCIC) – As the CIO found upon his arrival and the fact that his staff was housed in several locations around the County. It added to the complexity of scheduling meetings, ensuring communications, and the department spent a great deal of time traveling to other locations to attend necessary meetings with other members of the Department. The department was also leasing several locations to meet its housing needs. The costs of these leased facilities were rising and will cover most costs of the new facility.

Now with the consolidation and the doubling of staff, the problem has only been exacerbated. The new facility is 140K square feet and can house all of the staff within the department that does not need to be co-located with the business customers that they support, will provide better collaboration, provided for centralized training facilities, an innovation hub for interns and students, and appropriate lab facilities for staff. It provides for a core location to showcase the innovations that are moving the County towards its technology goals.

Riverside County Collaboration Center (rc³) – rc³ is also the Riverside County's Cloud. We intend to move the County's current central data center off the tenth floor of the CAC since this location does not provide adequate safety for the center and is not an efficient and conventional location for a large scale data center. The same is true for other smaller RCIT and Departmental data centers located throughout the County which will be consolidated into this location. The cost of rc³ was significantly less than building a lesser data center into the RCIC, as was originally planned.

- Provides 18,500 square feet of Tier 3 data center space;
- Meets higher data center requirements than any other location within the county;
- Allows the County to close other centers which are currently under lease;
- Provides critical data center space for RCRMC other County departments;
- Provides revenue by leasing data center space to other public and private agencies from around the nation;
- Showcases Riverside County as a technology leader and service provider.

Riverside County's Cloud? You might say, how rc³ a cloud service when it is local and on premises. Per Wikipedia, the definition of cloud is:

Cloud computing involves distributed computing over a network, where a program or application may run on many connected computers at the same time. It specifically refers to a computing hardware machine or group of computing hardware machines commonly referred as a server connected through a communication network such as the Internet, an intranet, a local area network (LAN) or wide area network (WAN).

The Cloud comes in many forms: Private, Multi-tenant, Tenant, Hosted, and so on. rc³ includes both a *Private* (those services provided directly to internal County Departments) and *Tenant* (those facility services we provide to our external clients).

Overall, the current trajectory is that the County is well positioned to become the technology leader it strives to be. It will take a lot of work, there will be challenges, but it is DOABLE!

4. History of Consolidations in County Governments

4.1 General Trends...

Gartner has studied the process and results of consolidation in the public sector and the course that we are pursuing is consistent with their and other expert's recommendations. Our results thus far validate the path that we are on.

Over the past few years there has been a national trend to centralize municipal information technology operations. Almost all California counties similar in size to Riverside County have either consolidated or are in the consolidation process, including: San Diego, Orange, San Bernardino, Santa Clara, San Francisco, and Sacramento; also, the City of Los Angeles. The consolidation effort is not exclusive to California; municipalities throughout the country are also consolidating their technical resources, including: Fairfax County, Virginia; King County, Washington; Cook County, Illinois; and Dade County, Florida. A few counties are far enough into the process to report savings, for example King County, Washington reported an estimated savings of \$10 million over a five year period and Sacramento County recently reported annual savings of \$3.5 million.

4.2 State of California...

The State of California is also working on multiple internal consolidation projects and supports the consolidation projects of other California Municipalities, such as the one in Riverside County. Some of the focus areas for the State are Standardization, Data Center, Email, and information sharing. More specifically, State Agencies have and are agreeing to consolidations and converged networks for municipal systems that they have regulatory authority over and provide grant funding for.

The State's goal is also in line with the County goal of delivering more, at a faster pace, while reducing redundancies and costs. With the final goal of a more transparent and available government to the constituents thereof.