Information Technology Services

Office of the Chief Information Technology Officer

Annual Report 2019

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www.kerncounty.com/its/innovationhub.aspx

ITS 2019 - Our vision

"OFFER UNPARALLELED CAPABILITY IN DELIVERING DATA-DRIVEN SOLUTIONS, WITH THE RIGHT SERVICES, THE RIGHT WAY, AND THE RIGHT TEAM."

As Kern County closes out a successful 2018, Information Technology Services (ITS) continues expanding product and service offerings across a more connected Kern County. In keeping with the mission of the Administrative Office (CAO), Information Technology Services is committed to aligning its priorities and goals to:

- *Enhance Quality of Life for Kern County residents;*
- *Be a Model of Excellence in Managing our Business and People; and,*
- *Foster a Culture of Innovation.[1]*

To support the strategic direction of the CAO, Information Technology Services recently made key personnel investments, aligned disparate teams, and developed more service-oriented models collaborating with the various business units within Kern County. 2019 will align:

- *Business strategies for technology outcomes;*
- *Data-driven decision making to solve business problems; and,*
- *Collaborative and inclusive technology leadership with a customer first discipline.*

Information Technology Services fosters a vision that offers unparalleled capability in delivering data-driven solutions, with the right services, the right way, and the right team. With a combination of strong partnerships, earning the trust of our customers, process rigor to providing value and outcomes, and, accountability and ownership to project goals, Information Technology Services is poised to drive the digital transformation across Kern County resulting in more cost-effective, value-driven and a results-oriented performing culture.

This report illustrates Information Technology Services' action plan by highlighting fundamental principles and initiatives targeted for 2019; prescribes solutions to solving business challenges within licensing, staffing, and core standards; and, looks ahead in creating a high-performing culture with data-driven results.

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Information Technology Services (ITS)
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[1] 2017-2020 County of Kern Strategic Goals. 2017. Retrieved from https://www.kerncounty.com/artman2/main/uploads/1/countywide-strategic-framework_3.pdf

ITS Leadership Group

THE INFORMATION TECHNOLOGY SERVICES LEADERSHIP TEAM CONSISTS OF A GROUP OF PROFESSIONALS WITH SPECIALIZATION AND CERTIFICATIONS ACROSS MULTIPLE BUSINESS AND TECHNOLOGY DOMAINS. WITH AN AVERAGE COMBINED PUBLIC SERVICE TENURE OF 16 YEARS, THESE LEADERS FOCUS ON PRODUCING ACTIONABLE, MEASURABLE AND REPEATABLE SOLUTIONS.

INFORMATION TECHNOLOGY SERVICES IS A CRUCIAL PARTNER IN KERN COUNTY'S DIGITAL TRANSFORMATION LEVERAGING DATA AND INFORMATION ANALYTICS. COUPLED WITH PRUDENT PROJECT MANAGEMENT RIGOR AND CONSCIOUS CONSIDERATION FOR STANDARDIZATION, WE OFFER A METRICS-BACKED APPROACH TO TECHNOLOGY OPERATIONS STRIVING TO IMPROVE THE CUSTOMER JOURNEY AND OPTIMIZE THE UTILIZATION OF OUR PRODUCTS AND SERVICES.

Mac Avancena, Jr.
Chief Information Technology Officer

Fidel Chavez
Technology Services Manager
Enterprise Technology

Eric Mansfield
Technology Services Manager
Workspace Technology

Ron Nakagawa
Technology Services Manager
Enterprise Applications

Aaron Nance
Technology Services Manager
Web Platform Technology

Lee Ann Herron
County Information Security Officer

Laura Akey
Business Manager
Information Technology Services

Fig 1 – ITS Leadership Group

ITS Service Catalog

THE SERVICE CATALOG ILLUSTRATES THE SCALE OF SERVICES AND PRODUCTS MANAGED BY INFORMATION TECHNOLOGY SERVICES. RECOGNIZING THE NEED TO DRIVE MORE INFORMED DECISION-MAKING, INFORMATION TECHNOLOGY SERVICES IS LEADING THE KERN COUNTY DATA AND ANALYTICS MOVEMENT WITH DEDICATED SERVICES AND SOLUTIONS WHILE ASSURING OPERATIONAL EXCELLENCE, PERIMETER CONTROL, SYSTEMS INTEGRATION, APPLICATIONS HOSTING AND ENTERPRISE STANDARDIZATION.

Enterprise Technology
- Infrastructure
- Telecomm / Microwave
- Identity Management
- Threat Security
- Endpoint Protection

Workspace Technology
- Desktop Management
- Mobile Management
- Service Management (HD)
- Email / Collaboration
- Active Directory
- HR (provisioning)

Enterprise Applications
- Criminal Justice (CJIS)
- Financial Management (FMS)
- Property Tax (KIPS)
- Payroll

Web Platform Technology
- Business Applications
- Web Technology
- Hosting Services
- Sharepoint
- GIS

Information Security Office
- Threat Assessment
- Policy/Governance
- Mitigation Response
- Cyber Incident Response Management
- Security Operations

Analytics
- Visualization/Reporting
- Data Management
- Forecasting / Modeling

Engagement & Portfolio Mgmt
- Business Engagement
- Scope/Cost/Scheduling
- Planning/Execution/Close
- Project Governance
- Technology Demand Management
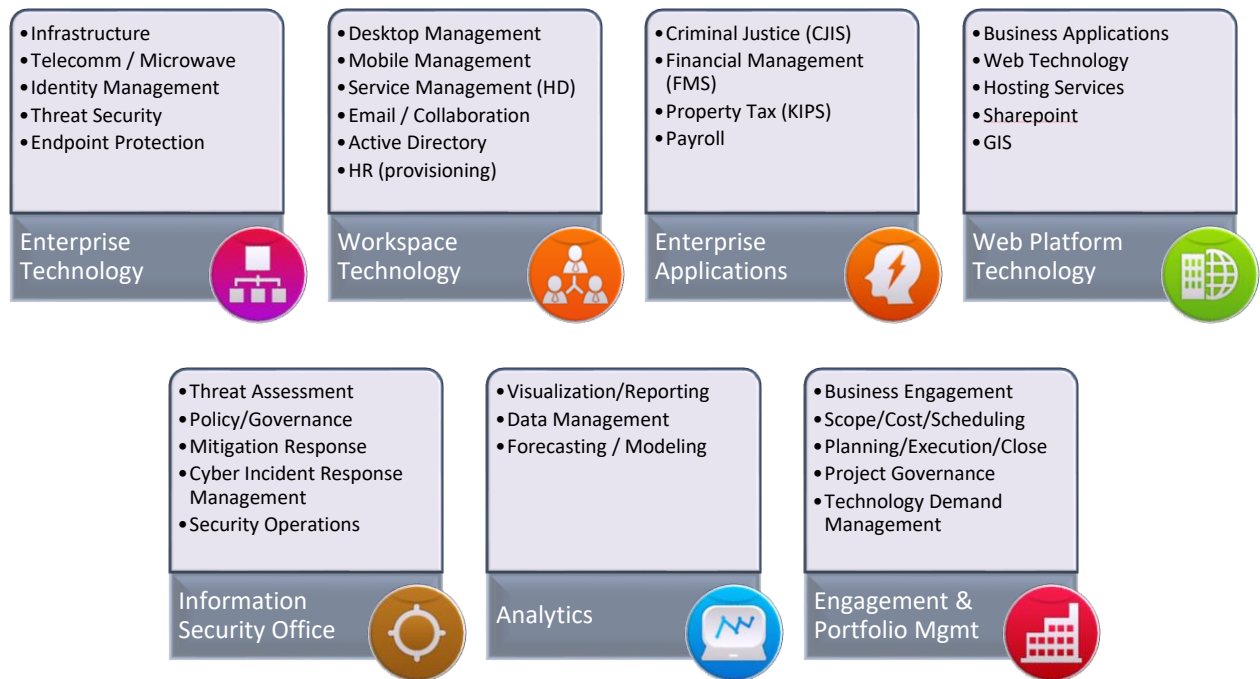
Fig 2 – ITS Service Catalog

ITS Functional Diagram

THE INFORMATION TECHNOLOGY SERVICES FUNCTIONAL DIAGRAM REPRESENTS OUR MODERNIZED AND CONNECTED ECOSYSTEM. IT STARTS WITH BUSINESS ENGAGEMENT; SHOWCASES NEW ANALYTICS, ENFORCES SECURITY GOVERNANCE ACROSS THE FUNCTIONAL STACK; AND, ANCHORS ENTERPRISE-LED CROSS-FUNCTIONAL SERVICE ORGANIZATIONS.
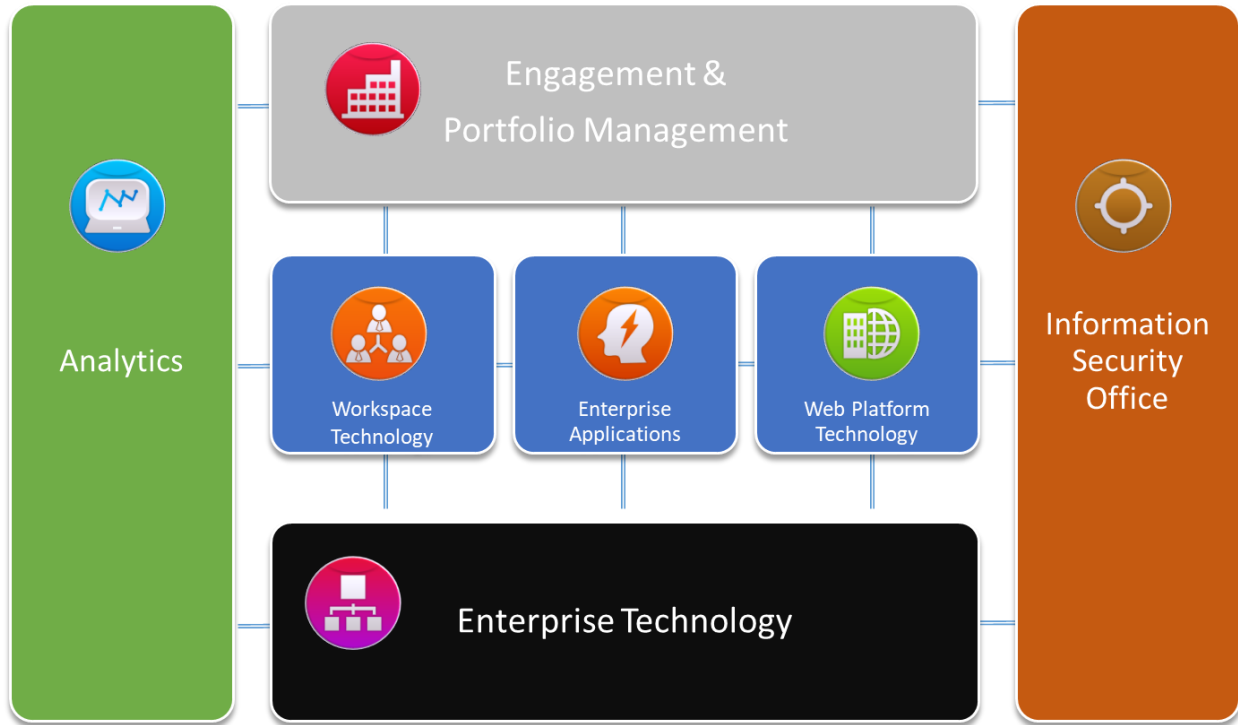

Fig 3 – ITS Functional Diagram

ITS 2019 Strategic Imperatives

SAY IT | DO IT | PROVE IT

Data and Analytics that transform and innovate with Information Technology Services at the helm

Maximizing value with our partners: accounting of where, why and how we spend

Building a culture of performance and accountability

Core standards and security

Data and Analytics

With Kern County's investment in Microsoft's O365 productivity suite, Information Technology Services generates insights producing actionable results through Microsoft Power BI. At the end of 2018, Information Technology Services hosted its first ever Datathon event hosting multiple business units chartered to explore ways to investigate data, solve business problems and, encourage thought leadership and knowledge sharing. These Kern County businesses are thought leaders studying analytics as a practical method to solve problems. The teams included staff members from the offices of:

- *Library;*
- *Department of Public Health;*
- *Department of Behavioral Health Services;*
- *Aging and Adult Services;*
- *Chief Administrative Office; and,*
- *Information Technology Services.*

To date, Information Technology Services creates prototypes, operational models and various visualizations that solve and identify business problems, make operations more efficient, and categorize areas of performance improvement. Data and Analytics platforms continue to be a transformational tool for Kern County Information Technology Services allowing leaders to measure performance and increase transparency.

Information Technology Services collaborates with internal Kern County service organizations looking for ways to improve the customer journey. We are exploring use cases designed to understand customer trends, showcase revenue-generating opportunities, and, use data in ways to facilitate better and timelier decision making – from pivoting resources to support critical business needs, to exploring GIS data, to optimize mobile services, Information Technology Services with its capability in visualization and analytics, partners with the industry to drive value.

Data and Analytics that transform and innovate with Information Technology Services at the helm

"The new source of power is not money in the hands of a few, but information in the hands of many" – John Naisbitt

Government Transparency

A key advantage to democratizing data is the ease in which it encourages user interaction and exploration. Information Technology Services developed its next-generation government transparency portal across Kern County's financial operations. Currently in phase I pre-release, Information Technology Services' internally developed *"OpenKern"* replaces a commercial cloud solution resulting in annual savings of $40k.

"Information Technology Services' internally developed OpenKern replaces a commercial cloud solution resulting in annual savings of $40k."
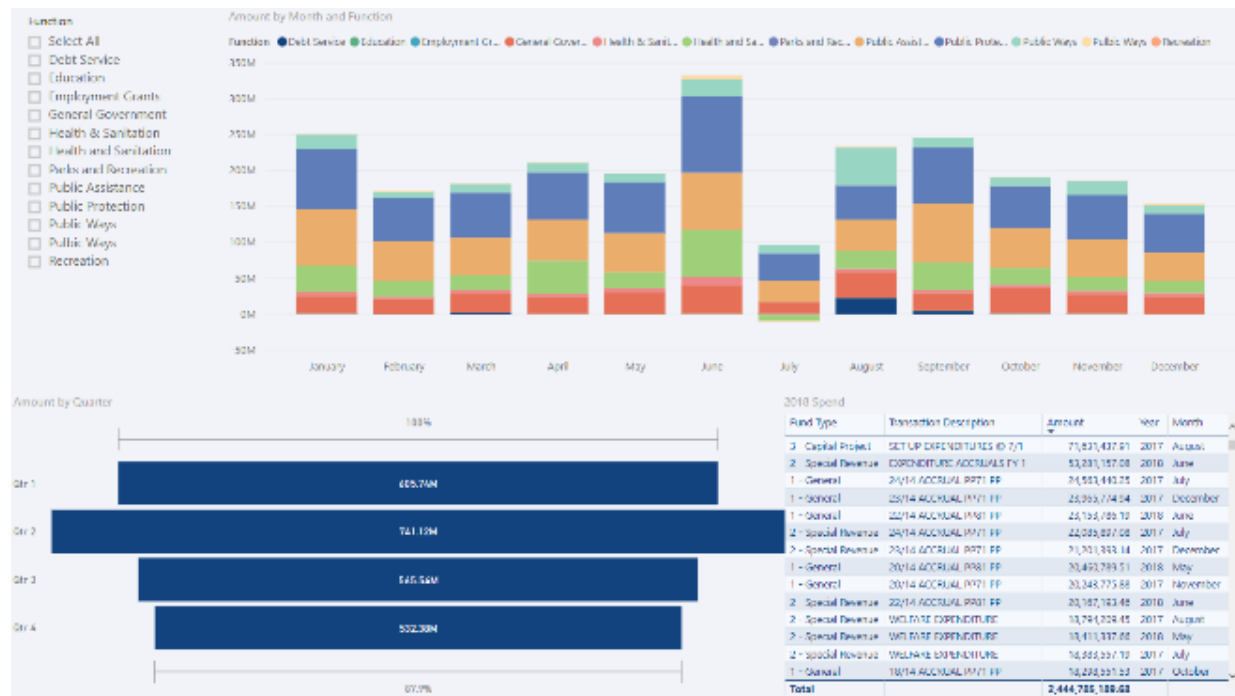
Fig 4 – ITS OpenKern Analytics Platform visualizing Kern County 17/18 budget

Information Technology Services is at the helm in driving this thought leadership; recognizing that as data owners, we are responsible for telling our user story and informing our constituents about initiatives that promote government transparency. As vital strategic opportunities, these represent a small scale of how Kern County is positioned to drive transparency and provide tremendous benefits in informing constituents and businesses alike.

Constituent Sentiment

Fig 5 – ITS Animal Services historical dashboard reporting from 2010 - 2018

Kern County continues to deploy modern ways to solve business problems. One key example is the partnership between Information Technology Services and *Animal Services*. Using data mined from Animal Ser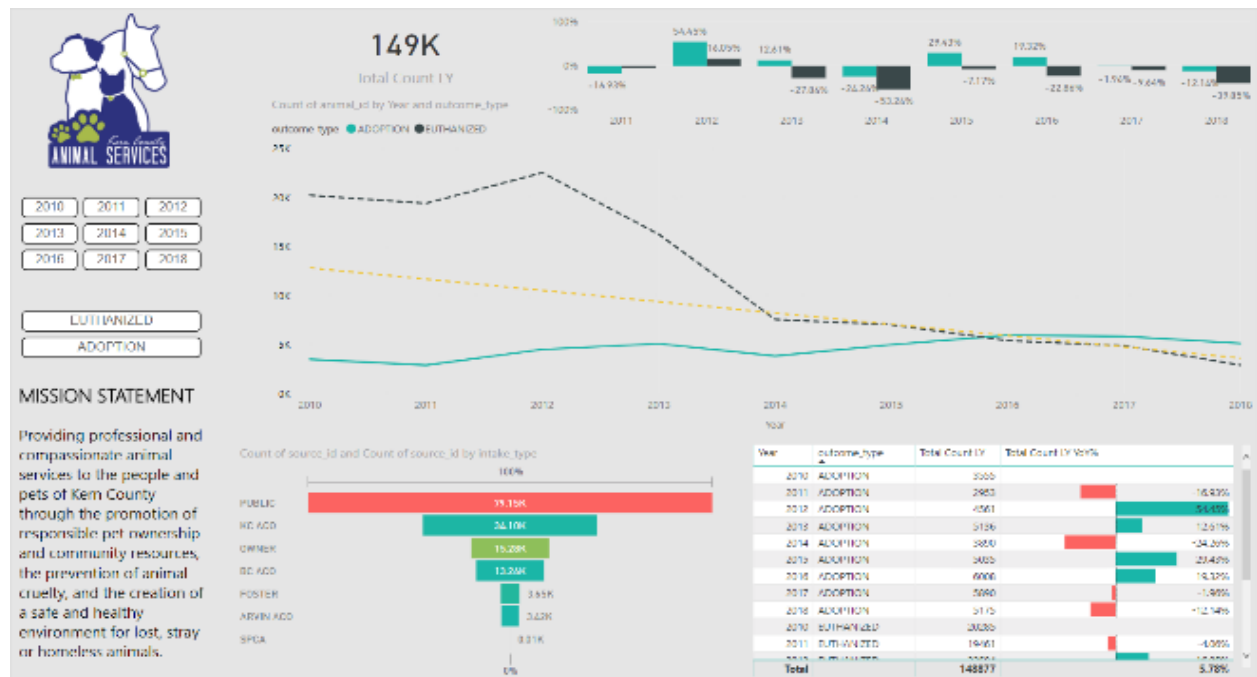vices' workload tracking system, Information Technology Services created an interactive dashboard chronicling the reality of managing one of California's largest shelters, and their mission to make Kern County a kill-free shelter.

Moreover, Animal Services is raising public awareness and consciousness through data discovery empowering personnel with valuable statistics to promote its mission, collaborate with private entities, and raise awareness of this critical social need and socializing critical key performance indicators (KPI's) such as animal health outcomes, the effectiveness of spay/neutered programs across supervisorial district, and intake sources that assist in aligning the right resources to support Animal Services' mission by enabling constituents to access this information any place, any time, and on any device.

An article from the Bakersfield Californian references their multi-year journey narrating how visualization enables constituent transparency in understanding trends and patterns around how Kern County transforms animal care.[2]

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[2] Morgen, Sam, "*County euthanasia rates have fallen dramatically since 2010*", *Bakersfield Californian,* Jan 5, 2019
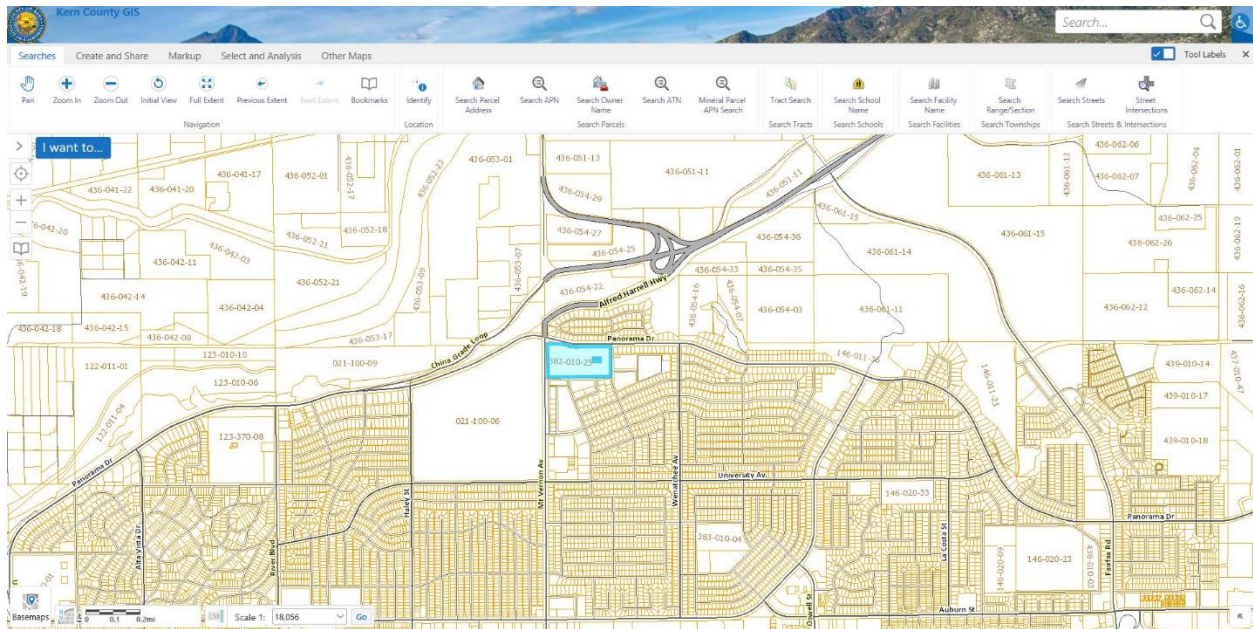
Geographic Information System

Fig 6 – ITS GIS visualization

In today's business environments, just having data about operations and activities is not enough. Being able to visualize that data is a tremendous advantage when it comes to an understanding and exploring data. The value add in the ability to tie all of that to a location; on a house, a neighborhood, or district, makes data personal, relatable and, actionable.

In the Kern County Board of Supervisors approved Technology Assessment of 2016[3], the Board of Supervisors, based on recommendations from Information Technology Services, chartered a program to "Evaluate ways to Implement Countywide GIS Program."[4] Information Technology Services hosts and maintains Kern County's primary GIS environment, providing modern and relevant maps and data services to everyone, everywhere. Through the efforts of the GIS team, Information Technology Services continues to serve as the hub of GIS-coordinated activities and partnerships across the departments of Kern County.

GIS is a mature enterprise platform with business users across the following Kern County departments:

Agriculture and Measures	General Services	Emergency Operations
Animal Services	Behavioral Health and	Center
Assessors	Recovery Services	Roads
Elections	Planning	Parks and Recreation
Child Support	Public Health	Sanitary Waste
Human Services	Public Works	
Fire	Sheriff	

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[3] Board of Supervisors "Information Technology Assessment", Mar 1, 2016

[4] Board of Supervisors "Proposed Geographic Information System (GIS) Standards From The GIS Executive Committee", Mar 7, 2017
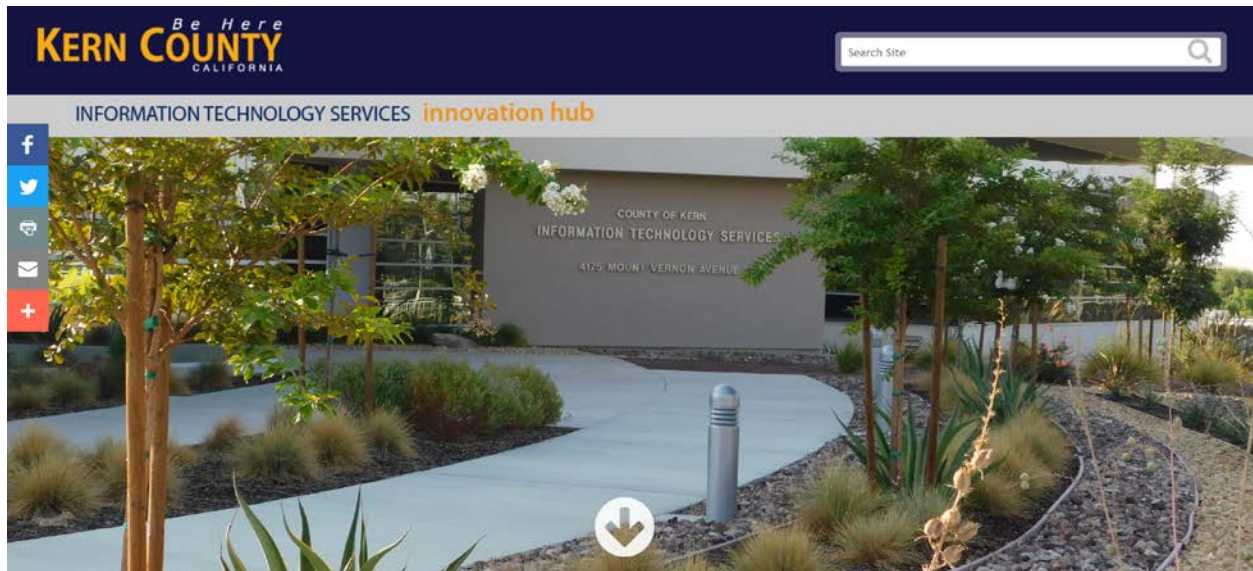
Content Management System

Fig 7 – ITS Innovation Hub Website

Information Technology Services is committed to providing a first class website experience for Kern County, partnering with industry-leading Granicus Inc. to host and redesign the KernCounty.com domain and rebrand the face of Kern County. This initiative will transition web pages and resources to a hosted Content Management System (CMS), positioning Information Technology Services development teams to be more responsive and dynamic in meeting the website needs of KernCounty.com.

Additionally, this CMS environment and design approach, enables and welcomes other departments, who have traditionally maintained their websites, to join KernCounty.com. This supports a standardized branding and a unified online experience while being able to keep control of their content and identity.

Looking Ahead

Promoting data and analytics services is critical to our digital transformation. For summer, 2019, ITS will sponsor the first-ever Data Showcase to highlight the ongoing commitment and outcomes-driven solutions from its data initiatives. Business units across Kern County will demonstrate their utilization of data across a series of informative internal conferences, designed to spur curiosity and encourage continued investment of resources and training to data solutions.

Modeled much like manufacturer roadshow events, the Data Showcase will be both a training and incubation platform for new idea generation, business problem exploration, and ultimately, raise our consciousness to highlight the power of informed decision making through data. Data is the new currency that will dictate transformational decision-making. With ITS firmly positioned to lead, Kern County will open new methods that validate and affirm critical business processes.

Value-added partnerships – Enterprise Software

Kern County generally sources IT products, services and other agreements on an individual business unit basis. While it allows autonomy for various business units to manage their ongoing IT spend, it also highlights inefficiencies associated in not having common purchase agreements, co-termination of licenses, and overall value through consolidation of all investment towards a master service level agreement or end-user license. Furthermore, given the absence of centralized governance and strategic policymaking, results in heightened risk.

An analysis conducted by Information Technology Services in 2018, identified that in FY 17-18 there were roughly $10M spent on combined IT purchases countywide. Of significance that the spending occurred across:

- *54 business budgets;*
- *30 unique vendors, and;*
- *2,570 transactions.*

Moreover, these numbers do not reflect the dependence on departmental purchase cards (p-cards) for smaller dollar purchases not funneled through traditional procurement channels.

Key findings upon further analysis identified unplanned and unstructured buys for like-products. In essence, had there been a more coordinated plan and consideration, these purchases could have been bundled together for a larger quantity buy resulting in more favorable pricing and/or terms. Further, the required time the business office staff spends maintaining agreements is not only inefficient but also risky as evidenced by several just-in-time renewals of critical product services. Lastly, business office staff are finding themselves navigating different IT-specific contracts with terminology adding to the complexity and inconsistency between agreements.

Maximizing value with our partners: accounting of where, why and how we spend

"The bitterness of poor quality remains long after the sweetness of low price is forgotten" – Benjamin Franklin

> "There is tremendous opportunity to drive a higher standard of convenience, control, and consistent ordering and fulfillment experience by applying sound application rationalization principles."

A core tenant of consolidation facilitates stronger business relationships using multi-year agreements, cost containment, and simplified ordering processes. These are all objectives Information Technology Services will lead in 2019, and what we refer to as our Value-Added Partnership.

Information Technology Services has kicked off detailed audits of enterprise-wide software entitlements. The initial analysis includes Microsoft O365 and Server/SQL products and various maintenance agreements for assets currently in production. There is tremendous opportunity to drive a higher standard of convenience, control, and consistent ordering and fulfillment experience by applying sound application rationalization principles.

The model below illustrates general industry best practices highlighting maturing capabilities of the supply chain, procurement and vendor management. Across IT spend, there is tremendous opportunity to secure a higher standard of excellence.
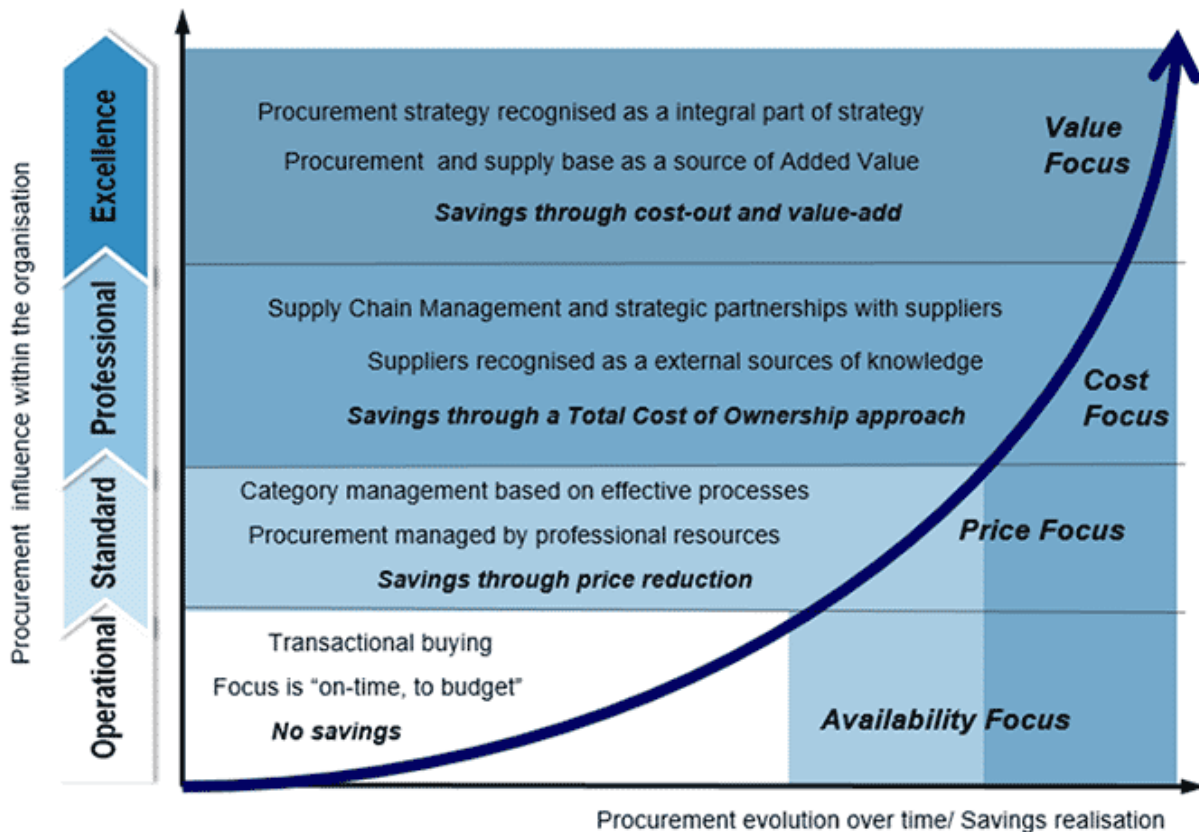

Fig 8 – Procura Procurement Maturity Model

This is just the beginning of an enterprise-wide business transformation initiative. By reducing supply chain variation, while instituting measurable and actionable policies, facilitates rapid business decision making that maximizes investments. Further, this policy sets the example towards evolving a future state of mature Technology Business Management (TBM) described in a section below.

IT Service Management (ITSM)

With the consolidation of Public Services and Library IT to the Information Technology Services organization in 2018, Information Technology Services has been running disparate IT Service Management decision systems. Absent a centralized platform, there is a gap in consolidating data to obtain shared metrics on the customer journey. At the end of 2018, Information Technology Services invested in a unified decision support system, BMC Footprints. The rollout allows all Information Technology Services tenants to be on a standardized platform; enabling more thoughtful insight into service delivery according to service level, provides metrics on key performance indicators, and allows more informed decision making when deploying resources across the departments.

"The investment saves $10k/year in license fees and estimated to save roughly $50k/year in soft costs through automating what are currently manual routine processes."

Also, Information Technology Services deployed an asset management module to provide a single source repository of IT workspace assets. Asset management continues to be a critical business function as asset refresh, security compliance and patch management activities become frequently audited; automation and asset recovery are critical drivers towards a simplified operating model.
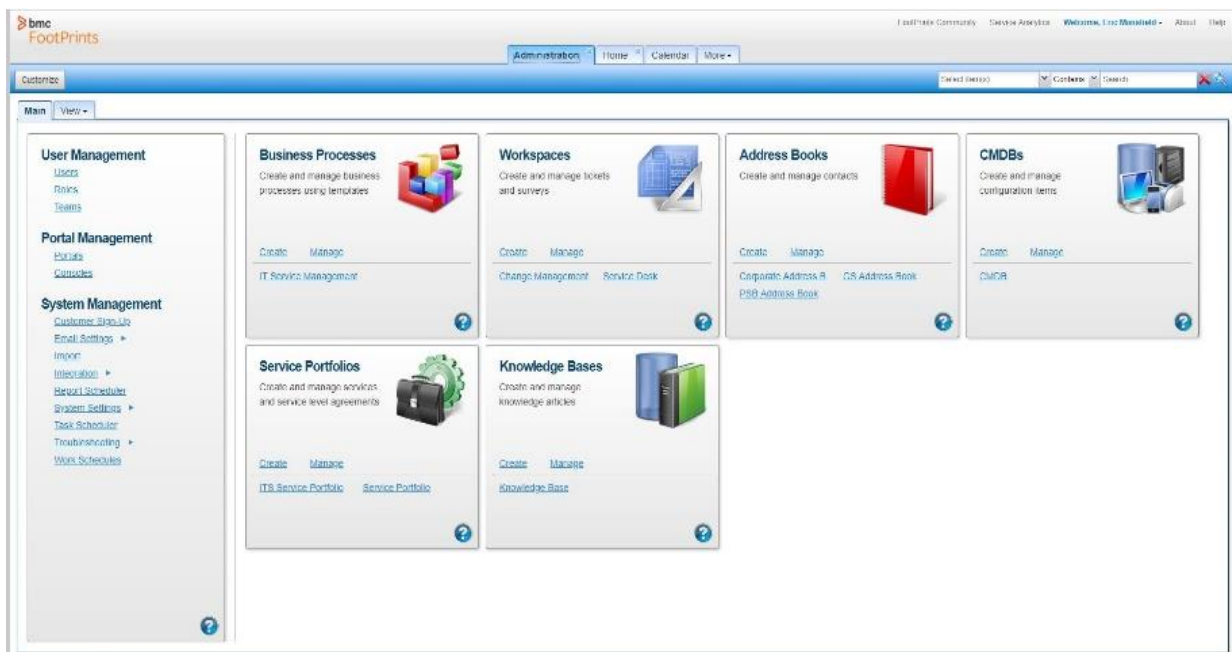

Fig 9 – ITS ITSM End User Services Dashboard

The deployment of Footprints reduces operating expenses associated with managing three different platforms. The investment saves $10k/year in license fees and estimated to save roughly $50k/year in soft costs through automating what are currently manual routine processes. Lastly, as the service desk consolidates across all Kern County technology teams, these savings scale out while benefitting from having a single source of truth when managing Kern County assets.

Data Services

In 2018, Information Technology Services evaluated its portfolio of data circuit agreements in preparation for deploying its next-generation cloud framework. Our findings identified third-party data/internet connections funded directly by business units resulting in excessive and unnecessary spend. The solution: Eliminate third-party internet connections and use Information Technology Services' high-speed backbone for shared internet services. At the end of 2018, Information Technology Services decommissioned individual business-funded internet circuits resulting in an annual savings of $13k/year.

"ITS decommissioned individual business-funded internet circuits resulting in an annual savings of $13k/year."

"This solution results in an additional reduction of VPN traffic by 30 percent assuring optimum performance through the reduced load."

In addition to providing hospitality (guest) internet access, users are now also able to connect directly to the Kern County corporate secured network; thereby, eliminating the need to use VPN software for users needing access to county resources from those locations. This solution results in an additional reduction of VPN traffic by 30 percent assuring optimum performance through the reduced load. In summary, these are examples of the tremendous consolidation opportunities as Information Technology Services continues to refine and introduce new services and products as a shared service.

IBM Enterprise Server Systems

The 2018 upgrade of Kern County's IBM Mainframe resulted in a hard savings of $125k annually by reducing its software spend rates associated with the new system. As a direct result of this upgrade, routine and emergency script processing associated to the four (4) legacy systems, CJIS, KIPS, Payroll and FMS hosted on the mainframe ecosystem, performed in upwards of 50% faster.

As part of this upgrade, the Tape Backup Unit was refreshed at no additional cost; the new backup unit replaces legacy tape media for an all disk-based solution, reducing backup windows by 40%. This upgrade was accomplished by extending the licensing agreement from single year-to-year to a multiyear contract. Continuing to review aged assets and conduct financial analysis, is where next-generation enhancements can provide both cost-effective savings and produce a better solution. This is another illustration of how Kern County can benefit from adopting multi-year strategic solutions.

Internet of Things (IoT)

As the Internet of Things (IoT) becomes more prevalent in our daily operations, these networked devices present tremendous opportunities for the County to achieve maximum efficiencies by streamlining normal day-to-day processes. IoT devices measure and analyze data often in real time so decisions can be made immediately on impacted services. IoT examples currently implemented, or in various development stages, by Kern County include:

- Public Roads - Road Traffic Controllers countywide
  - The goal reduces Motor Vehicle emissions by reducing wait time at traffic lights and signs. The "smart" system can sense when a lane slows down triggering action to optimize the flow of traffic. Currently, these changes are manual routines requiring a physical site visit and with limited and no real-time monitoring. Video at intersections is monitored for accidents.
- Public Works Engineering Survey
  - Trimble devices that not only tell you where you are in a car, but have replaced the old "stick and Transit" way of surveying. Using a Trimble device to record a point, survey lines can be created back at the office. Trimble also monitors the GPS satellites going overhead. Due to air expansion, orbit deviation, or other factors, small errors can change the recorded points. When the survey is finalized in the office, the database of satellite errors will help "Close" the survey. Currently, we have one static point on the Public Services building. Adding more devices around the County, for both County and public surveyors, results in a higher level of accuracy.
- Rain Gauges
  - Twenty-four (24) rain gauges are installed across Kern County providing early flood warnings that transmit data to weather satellites
- Special Waste Facilities
  - There is a real danger due to storage of special waste; everything from intrusion to explosions can occur. Cameras help monitor the sites, with optics that can even zoom in to read drum labels. This helps HazMat understand and assess the damage before entering the facility, and enables 24/7 monitoring of the facilities.
- Solar Panels
  - The devices are monitored to ensure that they are operating at an optimal level providing clean and pure energy to facilities. Kern County has expanded the deployment of solar to include lights, access gates and, road signs.
- Weather Stations
  - Across both active and retired landfills, state regulations require that rain is monitored at all sites for run-off pollution. IoT devices measuring rain, wind and other weather patterns monitors gases and other environmental hazards.
- Transit Buses
  - Kern County transit system to areas outside of Bakersfield continues growth across routes and capabilities. Today's buses are very technically advanced using satellite

phones for remote routes with GPS and video monitoring. Telemetry data download automatically from the recorder over WiFi when the bus returns to the depot. New fare boxes have been installed using a touchless system that prevents physical access to funds.

- Access Card Reader
  - Automates building, office and secure site access control pushing updates in real-time.
- HVAC sensors
  - Provides remote monitoring systems allowing more efficient and near real-time parameter setting changes instead of site visits.

July – Dec 2018 cumulative Information Technology Services hard and soft project savings reference

Description	Annual Spend Savings (hard)	Annual Spend Savings (soft/labor)
Open Enrolment	$1k (materials)	$29k (efficiency)
KGOV	$12k (circuit)	$5k (efficiency)
ETR	$1.2k (circuit)	-
BMC	$9k (consolidation)	$50k (efficiency)
IBM Software Licensing	$125k (maintenance)	$100k (efficiency)
Avaya Phone Licensing	$33.5k (maintenance)	-
OpenGov	-	$40k (cloud service)
KARS MVP	-	$40k (consulting spend)
WiFi Hospitality 5th Floor / Treasurer Tax	-	$14.5k (utility cost)
TOTAL	**$181.7k**	**$278.5k**
COMBINED TOTAL/YEAR SAVINGS	**$460.2k**	

FIG 10 – ITS JULY – DEC 2018 COMPOSITE SOFT AND HARD DOLLAR SAVINGS TABLE

Looking Ahead

Information Technology Services saved roughly $180k/year in ongoing hard cost in the second half of 2018 (see chart above) setting a pattern of prudent and strategic sourcing decision-making critical to how Kern County continues to lead the charge in the disruptive game of digital transformation.

Most notably, the table above showcases 6-month hard and soft cost savings by Information Technology Services' implementation of maximizing value through detailed evaluations of services and products; accounting for roughly $460k/year in savings across materials, circuit services, consolidation, maintenance contracts, consulting and efficiency.

For 2019, Information Technology Services will lead a cross-functional RFI and RFP to standardize vital strategic partnerships and vendors. Preliminary data shows that implementing an application rationalization policy will save the county a minimum of $200k/year hard cost and provides multiple value through lean process optimization. Parallel to this effort, will be a Lean Six program chartered to align the savings across various business processes, and ensure right cost structures are accounted for and reported.

In summary, we expect 2019 to be a record year for evaluating total license spend, coupled with quantitatively measuring soft savings, will be a turning point for how we maintain, execute and support business spending and achieve predictable outcomes.

Right-sizing resources

During the summer of 2018, Information Technology Services kicked off a monthly IT leadership committee designed to allow various Kern County IT teams a forum to collaborate, inform and share in the project and strategic decisions across technology. In order to build an organization rooted in accountability and high performance, it is evident that without shared cooperation across cross-departmental IT teams, progress around optimizing workflows, process, and procedures suffers.

There are four (4) goals of the forum:

- *To foster Open Communication and Trust between the County's IT centers;*
- *To facilitate and enable opportunities for teams to collaborate;*
- *To build a shared view of IT activity and initiatives throughout the County such as Change and Outage activities; and,*
- *To improve the sense of Customer Service from Information Technology Services to the rest of the County IT Community.*

The monthly IT Leadership committee is a part of a more comprehensive Information Technology Services effort designed to broaden IT reach across businesses, and introduce practical applications and solutions driving innovation and modernization of platforms, tools, and services.

Building a culture of performance and accountability

"Make sure everybody in the company has great opportunities, has a meaningful impact and is contributing to the good of society" – Larry Page

Operational Excellence

From July 2018 to the end of the year, Information Technology Services encountered four (4) critical business outages. These outages had broad impact across Kern County, and Kern County Information Technology Services implemented the new Outage Management and Root Cause Analysis processes. Information Technology Services now provides real-time notifications of enterprise outages ensuring critical notification across technical and non-technical stakeholders.

In the example below, a power outage impacting one of the critical data centers illustrates the total downtime experienced by the business, chronicles when critical systems were brought back online, and, provides a one-page visual summary.

Through implementing this communication process, Information Technology Services reduced the influx of calls to the service desk, and other first line technicians, allowing our resources to coalesce in solving business problems more efficiently. Post-mortem detailed summary reports are generated for all severity one outages and sent to Stakeholders chronicling impacting events, and, used to apply lessons learned into best practices.
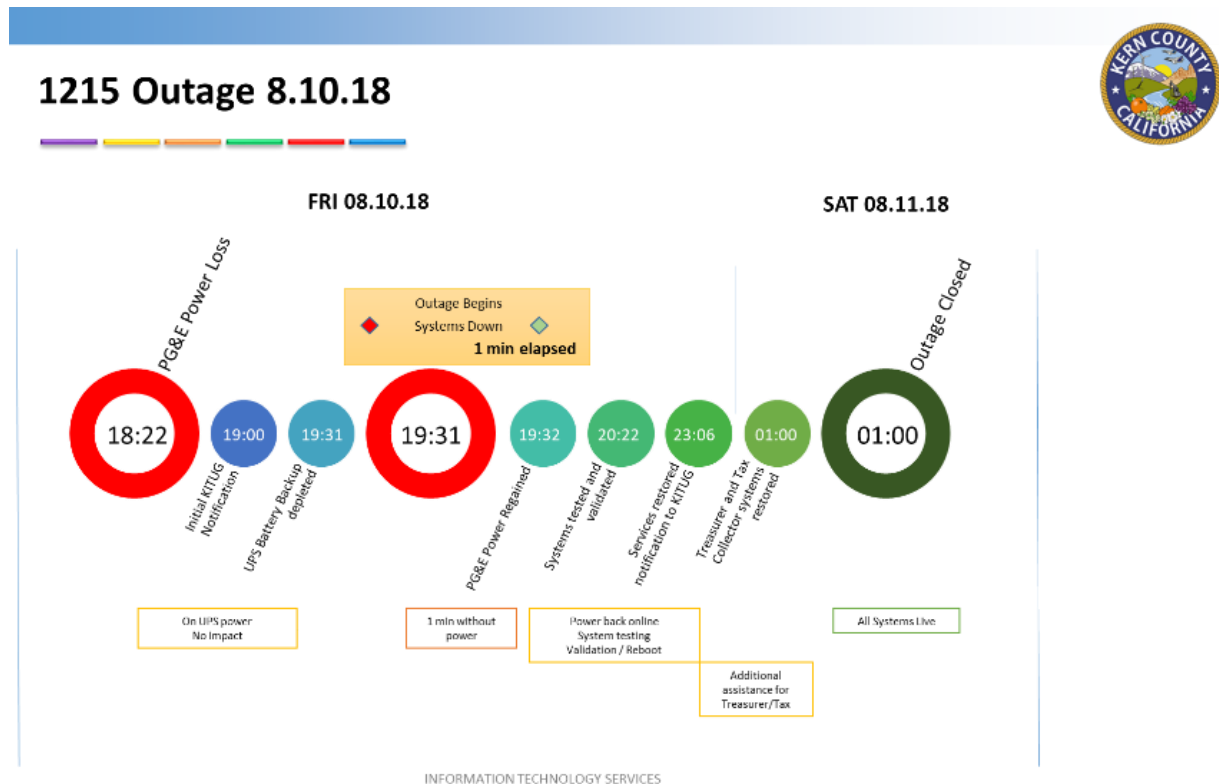

Fig 11 – 1215 Datacenter Outage Root Cause Analysis Timetable

Technology Business Management

Technology Business Management (TBM) is a maturing area of business transformation guided by three (3) core principles to:

- *Foster a Business Culture;*
- *Develop Sound Fiscal Disciplines; and,*
- *Enable the Right Value Conversations.*

"Today's technology executives have a big job to do, and the most innovative leaders are driving business value with Technology Business Management." - Apptio

The old paradigm of defining the value of IT is no longer measured by productivity gains and improved cycle times, but instead through positioning value and assuring a continuous improvement methodology. IT historically was looked upon as obstacles to business growth; with perceptions such as IT costing too much or not being active business partners.

Transparency in determining actual costs to provide services and products is no longer the domain of CFO's and executives. Information Technology Services' success is rooted in being able to simplify cost models and illustrate them, as much as possible, through consumption and a defined cost structure to the business. Therefore, Information Technology Services strategically positions its goals so that the market is free and nimble to manage demand and services with IT positioned as a strategic partner.

There is a tremendous body of knowledge in today's TBM. The TBM Council, for example, is a non-profit organization chartered to promote sound technology principles through alignment of "consumption, cost, and performance"[5]. As Information Technology Services positions their 2019 strategy around these critical tenants, one can encapsulate today's technology transformation summarily as a value-management framework known as Technology Business Management.

TBM, applied at Kern County, looks at the holistic picture of IT services across businesses. Therefore, consideration around procurement, as detailed above, portfolio management and change management are vital anchors in promoting a unified value stream for IT. Information Technology Services leads this charge with the development of the Engagement & Portfolio Management Office (EPMO) chartered to drive business engagement, measure performance and deliver value using process-based and rigorous best practices rooted in evidence-based methodologies.

Portfolio Management Excellence

Kern County's strategic programs in 2019 continue best practices in project management methodology. Given the scale and reach of these programs, it is critical that proper executive leadership, scheduling, scoping and costing is prepared to achieve portfolio success. In this light, Information Technology Services has established the Engagement & Portfolio Management Office, a matrix organization structured to refine projects, programs, subsidiary portfolios, and operations managed as a group to achieve strategic

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[5] Todd Tucker "Technology Business Management: The Four Value Conversations CIOs Must Have With Their Businesses" TBM Council 2016

> "The Engagement & Portfolio Management Office facilitates a repeatable, accountable and measurable process to manage multi-year, multi-million dollar initiatives."

objectives, manage project expectations and lead project communication across stakeholders. "Portfolio management is defined as the centralized management of one or more portfolios to achieve strategic objectives. The programs or projects of the portfolio may not necessarily be interdependent or directly related."[6]

Project Management is not a new concept for Kern County; Kern County has a record of accomplishment of successful projects. What this is, however, acknowledges that programs have become increasingly more complex, cross-departmental dependent thus taxing traditional organizational structures. In combination with Technology Business Management methodology, is the philosophy that holds all parties accountable to the success of the program. Additionally, structuring project participants with a clear voice to continually align project expectations with efficient delivery all structured under an IT focus. In the end, the programs exist to solve business problems; the EPMO does not take the business-deciding drivers out. The Engagement & Portfolio Management Office facilitates a repeatable, accountable and measurable process to manage multi-year, multi-million dollar initiatives that is consistent with and aligned with the overall County strategies.

The aim of portfolio management is to:

- *Guide organizational investment decisions;*
- *Select the optimal mix of programs and projects to meet strategic objectives;*
- *Provide decision-making transparency;*
- *Prioritize team and physical resource allocation;*
- *Increase the likelihood of realizing the desired return on investment; and,*
- *Centralize the management of the aggregate risk of all components.*

Furthermore, Project Management becomes a logical subdivision of Portfolio Management. Project Management manages the activities required to keep the project in control and accomplish the project objectives within the defined levels of tolerances; whereas, Portfolio Management is accountable for the success of the strategic goals of the each project and program put forth by the organization.[7]

An Executive Steering Committee drives project reporting: resources at a leadership level that oversees planned progress against actual goals. The Program Steering Committee drives project operational management: resources at a functional level that manages the day-to-day project activity. Having these two distinct committees benefits program delivery through:

- *Defining roles and responsibilities;*
- *Identifying escalation protocols and processes;*
- *Empowering functional participants and provides autonomy for project execution;*
- *Creating a standardized delivery model applicable to any project type;*

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[6] A Guide to the PROJECT MANAGEMENT BODY OF KNOWLEDGE (PMBOK GUIDE) Sixth Edition; pg. 15

[7] Abhishek Sanyal "Relationship between Project, Program, and Portfolio" Transition & Transformation Management 2016

- *Aligning financial and change management decisions; and,*
- *Facilitating a develop/deploy iterative process for agile and timely work breakdown deliverables.*
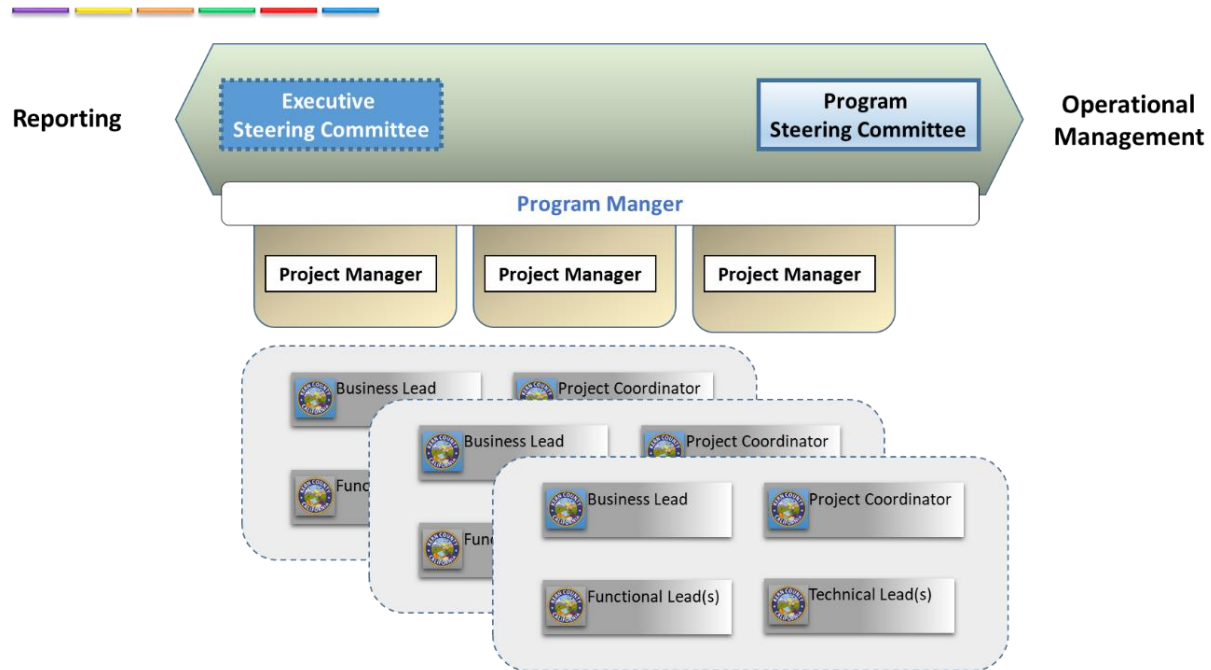
ITS Project Structure

FIG 12 – ITS PROJECT REPORTING AND ORGANIZATIONAL MATRIX STRUCTURE

As illustrated above, a Program Manager is assigned to each project is the central control point that manages the expectations across reporting and operational management. They are the highest level-resource managing project deliverables, status reporting, and issues management. Supporting the Program Manager are internal and external resources, based on the scale and scope of the project. Business Leads, Project Coordinators, Functional Leads, and, Technical Leads are examples of resources applied to support project delivery working under a matrix structure for the Program Manager.

Service Level Agreements

Anchoring Information Technology Services' culture of performance and accountability section, is evidence-based data capturing using Service Level Agreements. A key area of opportunity for Information Technology Services is demonstrating value through consistent reporting of performance. Just like identifying issues around operational excellence and building reporting to manage expectations, customer interactions requires the same approach. Initiatives like ITSM illustrates one pane of documenting the customer journey and measuring performance. However, there are more metrics to report.

Significant process improvements have already begun. The most transformational, however, lies with infrastructure services provided by the Enterprise and Workspace Technology teams. They rely on supporting the business from end-user integrations, telephony, and communications, to core network availability.

Information Technology Services identifies Key Performance Indicators (KPIs) to report out service assurance such as ecosystem health, systems availability, and utilization. For example, rate cards used to evaluate SAN cost allocations is used both as a capacity planning tool as well as

"If you can't measure it, you can't improve it."
– Peter Drucker

enforcing proper chargeback models. These are systems designed to measure value continually; value, as defined by the tangible deliverables Information Technology Services provides their customers.

Training

Training is a continual investment in personnel to drive the business and lead future innovations. Information Technology Services has recognized this and advocates an effort to enrich and incentivize its staff through a value-added training program encompassing today's marketplace within technology, strategy, and business.

Towards the end of 2018, Information Technology Services launched a two-phase program to certify the full department in ITIL Foundations, an industry-leading technology infrastructure framework, educating the entire team in the best practices utilized to provide services to our partners.

Information Technology Services also kicked off an online training pilot program to explore the value, and return on investment, of subscription-based online training for its staff. This pilot aims to demonstrate that a motivated team, when given the tools and opportunity, will make that extra effort to acquire certifications and business relevant skills adding value to the organization.

Information Technology Services staff members hold broad professional and educational certifications and degrees. Some of the following certifications and educational credentials include:
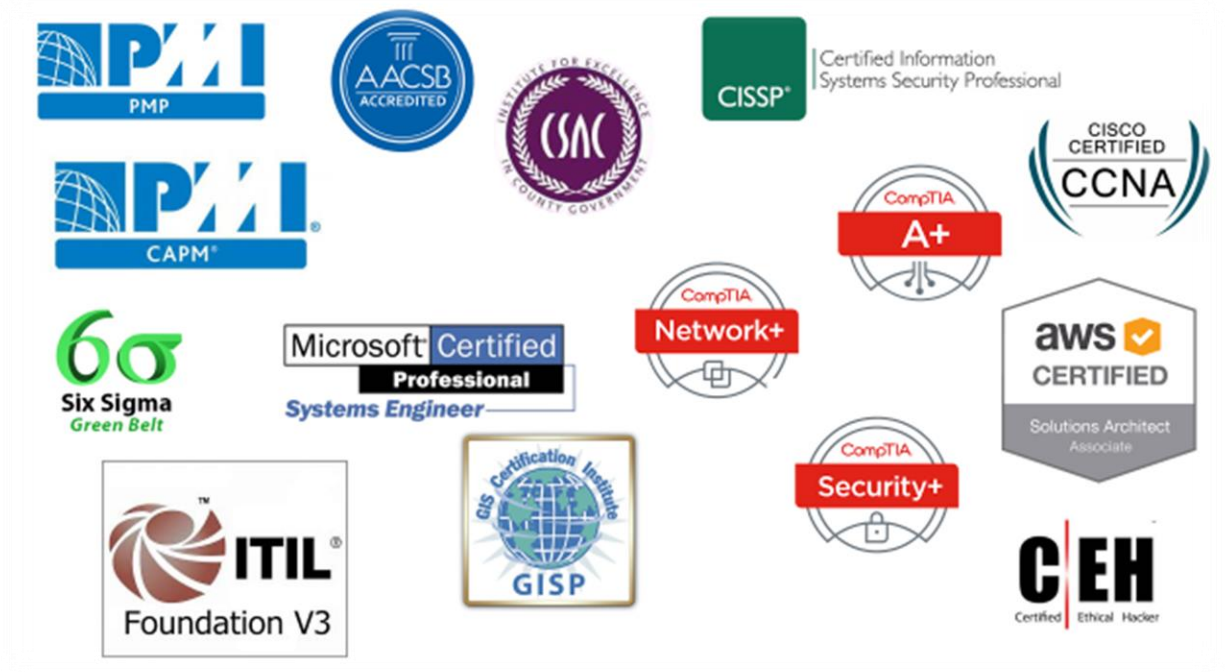
FIG 13 – ITS CERTIFICATIONS AND EDUCATIONAL TRAINING PROGRAMS

Looking Ahead

Promoting world-class execution and service assurance is an exciting time for Kern County and Information Technology Services; the foundation has been laid. 2019 presents many unique opportunities that will stress organizational models, business processes, and customer expectations. As such, Information Technology Services is taking leadership role in fostering a transparent, results-driven practice of proven delivery and exceptional customer service.

There are several strategic programs approved and are in various phases of delivery. Of particular importance, include the refactoring of Kern County's Financial Management Systems (FMS); a cross-departmental, enterprise-wide program designed to modernize and integrate the major supply chain operations for Kern County and all its departments.

Secondly, Kern County initiated a Content Management System (CMS) to modernize Kern County's online presence. With services now provided online, it is imperative that Kern County give a user experience unlike any other government entity: transparency, assistance, and service.

These projects are just a couple that illustrates the full capacity of Information Technology Services and their commitment to continual service improvement and delivery.

Active Directory Domain Consolidation

The migration to Office 365 and consolidation of other departments into the Information Technology Services organization, creates seven (7) disparate Microsoft Active Directory domains under a single cloud-based Microsoft Office 365 environment. These heterogeneous environments are hard to manage effectively and deliver uneven service quality. In 2018, Information Technology Services started developing a strategic plan to consolidate these domains into a single Active Directory (AD) structure under the kerncounty.com domain, with the goal to produce a centralized homogeneous environment between both Microsoft directory structures: Active Directory and Office 365.

There are the five (5) specific strategic benefits for establishing this single directory structure:

- Simplified Administration
  - *Single foundation and management infrastructure for all directory-aware services, user accounts, group policies, inventory, and object management sharing and delegation;*
- Improved Oversight & Governance
  - *Having only one domain means better security through a single security policy and a centralized set of administrators. If you have multiple domains, one weak but trusted domain exposes all the others;*
- Improved Customer Service
  - *Allowing synchronization of users, directories, and services across various business units with no disruptions to the customer. The business unit maintains independent functions, such as email retention and access. This allows the customer the ability be assigned, and/or move freely between the serviced County departments without risk of losing their existing email or other services;*

Core standards and security

"Cybersecurity is a shared responsibility, and it boils down to this: the more systems we secure, the secure we all are" – JEH Johnson

- Backup and Recovery
  - *Having only a single domain means better resiliency because every location has a full domain backup; and,*
- Faster Deployment of County IT Initiatives
  - *IT initiatives with just a single domain and shared account database solutions need only be deployed once, which means County-wide deployments are much faster than if the organization has multiple and separate domains.*

"Domain consolidation delivers reduced IT costs, while improving security and boosting productivity"

"A central domain will also enable us to improve data governance, and supports better collaboration across the County – a vital benefit in today's fast-moving business environment"

Security Operations

Kern County identified a growing need for a Security Operations Center (SOC) to stay abreast of new cyber threats as well as to respond to compromises and vulnerabilities systematically. The goal and function of the SOC is to provide operational monitoring of security within Kern County. The SOC reacts to day-to-day operations as well as provide holistic lifecycle threat management from design, implementation, and mitigation. A SOC is capable of advancing IT Security with an emphasis on identifying and implementing mitigation strategies, unifying County security posture, prioritizing vulnerable assets/high-risk departments with a goal of simplifying and standardizing security across multiple departments utilizing multiple platforms and designs.

The County Information Security Officer has collaborated with the US-CERT, MS-ISAC, and vendor manufacturers to alert the County of potential cyber threats. These policies are a significant advancement of security for Kern County. However, this is only the initial development of being proactive in the identification, management, reporting, and mitigation of IT threats. Cyber and physical threats to IT continue to grow more complex and more abundant as technology advances. To combat the growing cyber threat, the County must expand its security programs and countering the ever-increasing cyber threat; the County must expand its current security posture and establish a holistic view of County technologies and IT assets.

Due to security incidents that have occurred in the past, the County has adopted security mechanisms to respond and mitigate security threats. These responses proved highly successful in taking a proactive stance against phishing attacks and malicious emails for Kern County. This action immediately reduced the number of vulnerabilities and automated response to vulnerabilities, significantly reducing manual operational intervention. This implementation allowed for standardization of email security for all Departments while still allowing Departments to manage and design for their own needs.

The ISO continues to monitor for potential vulnerabilities and cybersecurity issues to harden the environment. Expanding the SOC services provides the following benefits to the County:

- *Centralization of vulnerability management and reducing duplication of vulnerability research;*
- *Identification and reporting of threats or potential cyber compromises;*
- *Standardization of cyber requirements and protection techniques;*
- *Consolidation of reporting channels;*
- *Analytics of County security incidents;*
- *Facilitating cyber incident responses for collaborative mitigation.*

Expanding the SOC services and capabilities enhances reaction time, mitigation of new and existing vulnerabilities, and provide for a holistic approach to security. By standardizing security design, implementation, management, and operations: automation, mitigation, and simplification of IT security become realistic and attainable. Reducing duplication of efforts, expedient identification of vulnerabilities as well as compromises, facilitation of incident response, consolidation of reporting and clear analytics of all County incidents, will allow for holistic lifecycle threat management.

Security Standards

Kern County has established security standards[8] based on NIST 800-53 Security Controls and industry best practices. The security standards have built a layered approach to hardening the IT environment and mitigating risk. The security strategy will instill a vigilant security presence in the evolving cyber threats that face the IT technologies today.

Kern County Information has defined standards within the Technology Chapter 7 policy to govern and regulate security objectives. County policy such as HIPAA, DOJ CJIS, IRS1075, and PCI, is implemented throughout the environment, a disciplined process to assess the compliance and potential risk exposure to the County, has been established.

By the end of 2018, Information Technology Services completed the security assessment with a focus on the security incident response process: The incident response process is vital to a proactive cyber monitoring state and the ability to quickly respond to security incidents. There was an average of 20% improvement in each department due to assessment compliance.

Departments instituted a standard and repeatable processes for user awareness and centralized reporting. The method to identify, track, and develop lessons learned were standardized to capture a holistic pattern of tracking. The improvement has enabled a quicker response to IT staff, notification of security threats, and ongoing awareness and training to County employees of cyber threats.

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[8] "Kern County Information Technology Chapter 7" Kern County 2017

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Looking Ahead

The planned security assessment in 2019 will cover the County's compliance based on the County's Information Technology Policy. The evaluation will include several layers and technologies; the network, server, and workstation configuration and design, social media presence with acceptable usage banners, SAN usage, email configuration, and identification of cloud services.

Additional security assessments will include specific Departments that are required to protect the constituent's data through regulated requirements, such as HIPAA, DOJ CJIS, and PCI.

The results of the assessment will able to identify vulnerabilities and high-risk areas the County will need to focus further layered mitigation protection strategies.

ITS 2019 – In closing

There is tremendous opportunity to innovate and transform how technology services are consumed, sourced, managed and operated across Kern County. The strategies and programs outlined in this document only represent a portion of Information Technology Services' mission offering unparalleled capability in delivering data-driven solutions, with the right services, the right way, and the right team.

Information Technology Services is committed to building strong partnerships, supporting initiatives through sound process rigor and accountability for the outcomes. Further, I intend to continue facilitating open dialog with Kern County leaders exploring ways to innovate and transform at scale.

Thank you for the men and women who support our interconnected ecosystems and dedication across Information Technology Services at Kern County.

Here's to a productive and fruitful 2019,

Mac Avancena, Jr.

ABOUT KERN COUNTY INFORMATION TECHNOLOGY SERVICES

FIG 14 – ITS VALUE PROPOSITION