e. Other potential issues weighing against a PAD program

After the victim collapses, use of the device is viable for a maximum of six minutes before irrecoverable brain damage sets in. The heart rhythm is shockable for a short period. In general, if a passerby comes upon a person who has been down for an unknown period, application of an AED will probably be ineffective.

The AEDs currently manufactured and distributed in and near Los Angeles County provide instructions in English only.

A victim must be on his or her back for placement of the pads. An unconscious adult is dead-weight, possibly requiring a rescuer to seek an additional person to help turn the victim over.

Philips, the city's supplier of PADs, requires that for every AED installed in a public building, five individuals be trained for the first AED installed in a facility or department, then one individual per each unit thereafter. Training is valid for two years, then the individuals must be recertified.

f. Educating the public on use of existing AEDs

Only a portion of the public seems to know about defibrillation, let alone how to open and apply an AED. According to a city official, the only marketing done on the PAD program was a public service announcement in 2003–04. That PSA is "dated," said the official, and the city's brochure on its PAD program likewise needs updating.

Fire stations across the county offer CPR training free to their neighborhoods. AED training could be incorporated. The Red Cross and the American Heart Association also offer training on the use of AEDs.

FINDINGS

1. Currently, the decision to institute a PAD program is within the discretion of individual county departments.

2. Although no one interviewed disputed the usefulness of AEDs, on balance the costs to Los Angeles County in expanding installation of the devices, as well as the time needed for training government personnel on the use of AEDS, do not justify countywide installation of AEDs.

3. Educating the public on the purpose of AEDs, including training in the use of existing AEDs, is economically feasible and would help make better use of already installed AEDs.

4. The city of Los Angeles PAD program is understaffed. Its existing devices are in need of maintenance and may currently be a liability.

RECOMMENDATIONS

2.1. The implementation of a Public Access Defibrillator (PAD) program should remain discretionary within Los Angeles County. The Board of Supervisors should continue to allow each department to retain the choice of implementing or not implementing this program.

2.2. The Board of Supervisors should implement education and training programs on the device before further investment is made in purchasing more Automated External Defibrillators and maintaining them.

2.3. The city of Los Angeles should re-evaluate its PAD program and either eliminate or fully maintain this program.

REQUEST FOR RESPONSE

Recommendation Number	Responding Agency
2.1, 2.2	Los Angeles County Board of Supervisors
2.3	City of Los Angeles

ACRONYMS

AED Automated External Defibrillator
CPR Cardiopulmonary Resuscitation
EMS Emergency Medical Services
PAD Public Access Defibrillator

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CITY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS DISPUTE-RESOLUTION PROTOCOL

Virgil L. Greer Jr.
Adrian Tigmo

CITY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS DISPUTE-RESOLUTION PROTOCOL

TOPIC

This investigation determined whether or not the City of Los Angeles Department of Public Works' (LADPW) dispute-resolution protocol effectively serves the public.

BACKGROUND

In 2014, the Los Angeles County 2014–2015 Civil Grand Jury (CGJ) received a complaint from a city of Los Angeles landowner (the complainant) about his neighbor's building project and its impact on the complainant's property. The CGJ formed a committee (committee) to investigate the matter. LADPW and its Bureau of Engineering (Engineering) oversaw this project and the related permit process.

The complainant asserted that these agencies acted improperly on several grounds:

> (1) LADPW and/or Engineering failed to notify the complainant of a public hearing concerning the project, and thus he did not have the opportunity to object.
>
> (2) The project was subsequently approved, and the project went forward.
>
> (3) Eventually, a public road adjacent to the complainant's lot frontage was changed to a private road.
>
> (4) A concrete retaining wall was permitted along the front of his property. (See Photos 1 and 2, following.) The wall blocked his vehicle access from the street, and it contained drain pipes directed onto his lot.
>
> (5) The complainant feared the agencies' action created an easement that would encumber his property for the neighbor's and/or government's benefit.

LADPW stated that a notice of public hearing was mailed to the complainant and other neighbors. LADPW informed the complainant that it acted within its protocols and did nothing

wrong concerning the permit process nor in resolving the dispute. LADPW assured the complainant that his lot would not suffer any encumbrances due to the above project.[1]

METHODOLOGY

The committee started this investigation by reviewing the complainant's supporting documentation. This included emails, notes of telephone conversations, letters between the complainant and LADPW employees, the complainant's photographs of his lot, and his assessments of the communications between the parties. The complainant provided the committee with diagrams and assorted documents provided to him by Engineering and/or LADPW. The committee interviewed the complainant on several occasions.

The committee also contacted senior and mid-level management personnel from LADPW and/or the Los Angeles Department of City Planning (City Planning) to get information from the government agencies' perspective. This included requests for additional documentation, as well as interviews on facts underlying the complainant's allegations and the process employed to resolve the dispute. The committee focused on identifying which agency sent the notices of public hearings, as well as the documentation process.

The committee interviewed employees of two document services companies. The first service (document compiler) is retained by permittees to prepare documentation in compliance with City Planning's requirements. The second service (document mailer) is a subcontractor employed by City Planning to process property owners' documentation and distribute notices of hearing. The committee also reviewed the organization of LADPW and Engineering based on interviews, newsletters, and their respective websites.

CHRONOLOGY OF RELEVANT EVENTS

In 2001, the complainant's neighbor applied for a permit to improve his property.[2] The start of the permit process concerned redesignating the street adjacent to the complainant's lot from a public street to a private one. Though the complainant's property is inside Los Angeles County, he resides in another county. The complainant's lot remains undeveloped to this day. The complainant was rarely present at this property.

[1] LADPW senior management came to this conclusion first in mid-2013 and again in late 2014. Both conclusions were documented in LADPW's records.

[2] All references describing dates of government activities on a project or plan are derived from documents provided by LADPW, one of its bureaus, or City Planning.

Engineering created a report in March 2003 concerning work on this neighbor's construction, including a wall. Another report covered work on a new dwelling on this property in May 2003. Through this period, an Engineering field agent was assigned to the project. The public hearing

Photo 1. Citizen complainant's property before the wall was constructed.
Photo by and courtesy of the complainant

Photo 2. Property after part of the wall was removed.
Photo by Civil Grand Jury, taken Nov. 6, 2014

on the project occurred near the end of 2003. The plan was approved. An immediate appeal was filed by someone who had attended that meeting. That appeal was denied in early 2004. Engineering signed off on the permit in July 2006, which allowed construction to proceed. The permit was due to expire in 2010.

Consistent with the project plan, the project's construction, including the wall, was completed in early 2010. The final Engineering approval after construction followed in February 2010.

The complainant discovered the concrete wall in late 2011 when one of his relatives reported seeing it. The complainant was able to walk onto his lot but was unable to drive his vehicle onto it.

In mid-January 2012, the complainant contacted the city of Los Angeles via email at 311@lacity.org. At the end of January 2012, he emailed the Bureau of Street Services.[3] Neither agency responded to him. Next, the complainant made a series of telephone calls to various bureaus within LADPW with no fruitful response or resolution. The telephone contacts revolved around the need for information, such as a plan or permit number, which the complainant did not have.

During the first quarter of 2012, the complainant searched online regarding this project—including the LADPW website and its individual bureaus' websites. He searched sites of other departments as well. He could not find specific information without the relevant permit or plan numbers. He had only a street address for one of his neighbors' lots. The Engineering website is accessible only to permittees and is password protected.

In mid-March 2012, the complainant retained a contractor, who, without a permit, created an opening in the wall so the complainant could access his property by vehicle. (See photo 2.)

In early April 2012, a building inspector cited the complainant for creating an opening in the wall without first getting a permit. The complainant informed the inspector of his problem concerning his access to the lot, the lack of notice about the wall, and not getting any governmental help with his property problems up to that time.

The inspector then spoke with Engineering personnel who became directly involved in the complainant's dispute. The original field employee responsible for overseeing the permit process for the neighboring improvement was now involved, along with his immediate supervisor. In an effort to resolve the dispute, the field supervisor approved a rescission of the citation against the complainant. The wall modification remained in place. These two communicated with the complainant over a span of about a year.

[3] This is one of the five bureaus under the aegis of the City of Los Angeles Board of Public Works.

The complainant continued to request information to determine if the part of the wall next to his lot was built according to the approved permit, as well as who was responsible for that decision. The matter was then referred to Engineering's upper management. Engineering repeatedly told complainant the wall was built according to permit.

In a May 2013 letter to the complainant describing its final review of this dispute, the City of Los Angeles Board of Public Works concluded that "the process of notification for public hearings was performed through the Department of City Planning...to known addresses of adjacent and impacted properties…." The addresses came from records of the Los Angeles County Tax Assessor's Office.

RESEARCH

The complainant's problem had been resolved by the time the CGJ committee looked into this matter, but the complainant's frustration with the system was the impetus for the committee to find out what went wrong.

Ultimate leadership of LADPW resides with the City of Los Angeles Board of Public Works, which comprises five commissioners. Each commissioner oversees one of LADPW's five bureaus: Contract Administration, Engineering, Sanitation, Street Lighting, and Street Services. LADPW also maintains the Office of Community Beautification.[4] Based on the committee's staff interviews, observations of activities at a field office front desk, and information provided by the LADPW website, its division of labor is well-organized.

Engineering was apprised of 95 disputes in FY 2012–2013 and 101 in FY 2013–2014. By comparison, Contract Administration received about 175 for the same period.

LADPW works with other agencies that operate both independently and cooperatively. One such department is City Planning, which has responsibilities concurrent to building and improvement projects. City Planning has charge over the notices of public hearings as a precursor to an applicant getting a permit approved by Engineering.

Engineering staff stated it is its staff's responsibility to assist applicants through the Engineering process for permits. Staff also stated preparing and sending notices is not its responsibility. Some of the staff suggested that City Planning takes care of this.

[4] These bureaus receive hundreds of thousands of requests for services per year. (For the sake of clarity, Engineering defines "dispute" as a status of disagreement between a party and the government. Therefore, "complaints" are not included, because they reflect matters in the nature of requests for service.)

LADPW stated City Planning was responsible for sending notices of hearing and concluded that this task was done. To show this, LADPW forwarded to the complainant copies of maps and address lists utilized to identify property owners designated to receive these notices. LADPW also included documentation on the outcome of the public hearing in 2003.

However, in an Engineering email, an employee noted that he did not keep a copy of the notice of hearing in the matter investigated and was unable to find any copy in his old emails.

City Planning told the committee that City Planning was responsible for sending notices of hearings for persons seeking a permit to build improvements on their properties. It has employed a subcontractor since the 1990s to help with this process. Once a property owner's required documentation arrives from the applicant, it is given to the document mailer. After City Planning has a public hearing date scheduled, it emails the document mailer the date, along with an electronic copy of the notice. The document mailer prints the notices, puts them into the pre-addressed envelopes, and then mails them. The service then notifies City Planning with an affidavit of mailing. City Planning places this information in its permanent storage. Neither City Planning nor its mailing service used certified mail in this process.

City Planning personnel referred the committee to various employees until the employee with the most familiarity with the notice-of-hearing process was found. This employee had initial difficulty with the committee inquiry because the committee identified the issue as one involving an Engineering project. The employee questioned the validity of the inquiry because City Planning does not send notices of hearing for Engineering but sends them for private parties, such as an owner seeking to do a property improvement. Nevertheless, the committee provided the related Engineering plan number and street address for City Planning to use in its records search. The employee was unable to find the notice-of-hearing information. She noted that the numbers utilized did not appear similar to the numbers she would see in the normal course of this process. She stated she thought that the notice may have been sent by Engineering.

The committee asked City Planning about a service provider listed on documents, provided by Engineering to the complainant and the committee, relating to the Engineering plan in this investigation. The City Planning employee did not know this company and speculated that it may have been one who did the notices of hearing for Engineering instead. The committee contacted this company.

An employee of this company described it as a service provider for property owners seeking to get approvals from various governmental entities by producing necessary documents for permits and plan approvals. This document compiler focused on documentation required by City Planning to prepare notices of hearings. The document compiler was able to find information it

prepared on the related investigation because of the plan number the committee provided to it.[5] The documents included maps, diagrams, address lists, and address labels on behalf of the private party. After this documentation was compiled, the permit applicant would forward it to City Planning's mailing service.

According to an Engineering manager, after a permitted project has received its final authorization to proceed—that is, subsequent to the public hearing approval—the plan is sent to a Project Award and Control Division. Then the plan is placed in its online repository, which it calls its Public Vault. Permit applicants may check on their pending projects. This process was initiated in 2010 to assist Engineering's records operations. It is designed to help "anyone in need of retrieving documents archived in the [Engineering] Central Records Vault." This operation is under the Records Retention Group. During this process, a plan receives an "index number…[for] cataloging, document control, and archiving." However, this new process is designed to act in a complementary role with Engineering's Web service "NavigateLA."

Despite the various efforts by the committee to retrieve documentation from Engineering, under the combined "NavigateLA" program, or the newer "index number" procedure, no department was able to find a copy of the notice of hearing.

One may conclude that the affidavit of mailing might establish that it was sent to the complainant. The committee acknowledges this possibility. It still shows a weak link in the process because, with the efforts already in place, neither Engineering nor City Planning could find a copy of it. However, documents provided to the committee from the document compiler and mailing service show that maps and addresses were prepared, and that envelopes contained notices of hearings and were ostensibly mailed to people on the project's list of relevant neighbors.

FINDINGS

1. The City of Los Angeles Department of Public Works is unable to respond to citizens' inquiries because it does not have an adequate system for records retrieval.

2. The City of Los Angeles Department of Public Works and the Los Angeles Department of City Planning do not have shared identifier numbers for their common projects.

3. The City of Los Angeles Department of Public Works has no tracking numbers for disputes related to its projects.

[5] The permit number and plan number given to the document compiler was the same information given to City Planning in an earlier interview.

4. A nonresident owner may not be aware of a hearing because the notice of hearing was not mailed, or it was not properly delivered, or it was received but the owner did not recognize it.

5. The Los Angeles Department of City Planning does not keep a copy of notices mailed.

6. The Los Angeles Department of City Planning keeps copies of affidavits of mailings but could not locate that affidavit in this instance.

7. The City of Los Angeles Department of Public Works does not have access to information about its mailing of notices.

8. Without public access to city identifier numbers, city staff cannot respond to public inquiries.

9. After the public hearing, data is confidential, available to the property owner and the city only, until the project is approved.

10. The City of Los Angeles Department of Public Works' website is not organized to help the public register disputes.

11. The City of Los Angeles Department of Public Works has no dedicated phone number that the public can use to register disputes.

RECOMMENDATIONS

3.1. The City of Los Angeles Department of Public Works and the Los Angeles Department of City Planning should create joint project index numbers and a joint document storage system.

3.2. The City of Los Angeles Department of Public Works should employ a tracking number system for each new dispute.

3.3. The City of Los Angeles Department of Public Works and the Los Angeles Department of City Planning should revise and promote a process for mailing notices of public hearings to nonresident owners of property in the area being noticed. This process should include the practice of mailing two notices to ensure that adequate notice has been achieved. This process should include keeping records of mailing.

3.4. The City of Los Angeles Department of Public Works should make available to the public a dedicated telephone number for disputes only, on the department's websites and at its offices.

REQUEST FOR RESPONSE

Recommendation Number	Responding Agency
3.1–3.4	City of Los Angeles Department of Public Works
3.1, 3.3	Los Angeles Department of City Planning

ACRONYMS

CGJ—Los Angeles County 2014–2014 Civil Grand Jury
LADPW—City of Los Angeles Department of Public Works

COMMITTEE MEMBERS

Virgil L. Greer Jr.
Adrian Tigmo

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COUNTY INFORMATION SYSTEMS

John Acevedo, chair
Ken Star, vice chair
Jim Contreras
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COUNTY INFORMATION SYSTEMS

TOPIC

The purpose of this investigation was to assess the management of county information systems and the direction of further enhancements and development.

OBSERVATION SUMMARY

The county information systems lack central oversight and standardization. There is no standard methodology for development of new systems nor for maintenance of current systems; currently, development is done on a departmental basis.

Because no one entity currently tracks software development in the county, the costs and cost overruns are not being monitored, nor is the "success" of development being measured.

The proliferation of programming languages countywide is of concern because the county must support applications written in these languages.

Development and operations of large county projects have been exported out of county hands and into private industry, in state and out of state. In addition to making it difficult for the county to monitor the work, this has taken jobs out of the county.

Backup of data and security is haphazard, and a large-scale disaster can destroy one or more data centers.

Organization, including centralization, of county data centers is essential for efficient countywide operations. Centralization of production—running the software, making changes in the software, maintaining the computer hardware—is helpful in some respects. The downsides are increased complexity, some stifling of creativity, and less responsiveness to users' requests for assistance.

Why should citizens of the county care? Listed among the county's seven largest contracts are four information technology (IT) contracts exceeding $1.6 billion.

REPORT OUTLINE

Background
Methodology
Research
- A. Organization
  1. Back to centralization
  2. Current trend
  3. Security centralization
  4. Email centralization
  5. Data standardization
  6. Production centralization
  7. Programming languages standardization
- B. Software Development and Project Management
  1. Options for software development
  2. Difficulties in software development
  3. The example of the Assessor
  4. What is success?
  5. Measuring success
  6. Mitigating the risk of failure
     a. System development
     b. Project management

Findings
Recommendations
Acronyms
Appendix

BACKGROUND

The Los Angeles County 2014–2015 Civil Grand Jury (CGJ) formed a County Information Systems Committee (IS Committee) to evaluate Los Angeles County information systems.

Information systems provide the infrastructure for the flow of data to support the Los Angeles County functions and services. All county departments, organizations, and agencies rely on information systems, in varying degrees, to perform their work.

According to Alan Freedman in the Computer Desktop Encyclopedia, an information system is usually made up of one or more master files—usually called databases—and all of its data entry, update, query and report programs, manual procedures, and machine procedures.

According to county departmental CIOs, a new information system is designed, programmed, and then, upon successful completion, released into production under the control of a data center. A production system is used to process an organization's daily work. A data center has the staff, procedures, and computer hardware to run information systems continuously. The system is repaired and enhanced as needed.

The committee reviewed a list, provided by the Los Angeles County Auditor-Controller's office, of the highest-budgeted projects underway in the county. Four projects on the list are information system projects. A review of news stories reveals hundred-million-dollar failures in attempting to implement information systems in public and in private sectors. The committee was interested in how the county reduces the risk of failure and insures the success of the systems.

This investigation concentrated primarily on two aspects of county information systems: the organization of the county information systems effort, and the development of new software systems and the management of those projects.

METHODOLOGY

The committee's research procedure consisted of interviews and site tours. Rather than try to interview people from the more than 30 county departments and the various commissions and agencies that use information systems, the committee chose a sample. In the course of this investigation, 13 county departments and county agencies were interviewed:

1. Assessor
2. Auditor-Controller
3. Chief Executive Officer (CEO)
4. Chief Information Officer (CIO) of Los Angeles County
5. Department of Health Services (DHS)
6. Department of Public Social Services (DPSS)
7. Fire Department
8. Information Systems Advisory Board (ISAB)
9. Information Technology Services (ITS)
10. Internal Services Department (ISD)
11. Public Defender
12. Registrar-Recorder/County Clerk
13. Los Angeles County Sheriff's Department (LASD)

Five interviews were conducted to assess the overall structure, organization, and problems of information systems within Los Angeles County. Those organizations interviewed were the CEO, CIO, ISD, ITS, and ISAB.

Four interviewees were selected because their departments' combined spending on four contracts for information system development exceeded $1.6 billion (according to the Auditor-Controller). The four organizations were the Assessor, Auditor-Controller, DHS, and DPSS.

Four interviewees were chosen because of their departments' reputations for information system independence or unusual requirements. The organizations interviewed were the Fire Department, Public Defender, Registrar-Recorder/County Clerk, and LASD.

RESEARCH

A. Organization

In the past, county information systems were managed by the Los Angeles County Department of Data Processing. Almost all production systems ran at one data center. It provided software development and support, and production hosting for all departments. As a result, there was marked standardization in development methodology and project management methodology. There were database and security standards for the systems of all county departments. Programming techniques and program organization were standardized so that a programmer called in for an emergency, at night or on the weekend, could more easily and quickly find and resolve problems within the program code.

With the advent and availability of inexpensive but powerful minicomputers and microcomputers, users in organizations of all sizes broke from dependence on centralized data service. As stated by the CIO, this allowed small units to set their own priorities rather than competing for the resources of the Department of Data Processing. In general, the county has followed that trend and allowed each department to set its own information technology policy.

In contrast with the highly centralized and standardized information systems of the Department of Data Processing, the present county information systems are highly decentralized, many departments operating almost independently within a narrow silo. In general, departments have their own CIOs, answerable to the department and not to the county's CIO. As of September 2014, the county CIO reported 1,606 information systems in production countywide and 395 systems under development (see Table A below).

TABLE A

Los Angeles County Departments, Commissions, and Agencies with systems in production, under development, or neither

Title	Developing Applications	Existing Applications
Agricultural Commission Weights and Measures	5	18
Alternative Public Defender	3	5
Animal Care and Control	1	1
Art Commission	8	2
Assessor	2	79
Auditor-Controller	5	11
Beaches and Harbors	8	23
Board of Supervisors Executive Office	12	35
Chief Executive Office	0	34
Chief Information Office	0	0
Child Support Services	0	5
Children and Family Services	43	97
Community and Senior Services	0	9
Community Development Commission Housing Authority	0	26
Consumer Affairs	2	3
County Counsel	2	14
District Attorney	4	16
Fire	8	36
Health Services	65	486
Human Relations Commission	0	0
Human Resources	9	17
Internal Services	7	34
Information Systems Advisory Board	4	6
Medical Examiner–Coroner	5	7
Mental Health	9	70
Military and Veterans Affairs	0	0
Museum of Art	0	0
Natural History Museum	0	0
Parks and Recreation	4	26
Probation	5	34
Public Defender	2	9
Public Health	21	51
Public Library	3	11
Public Social Services	61	93
Public Works	4	57
Regional Planning	1	7
Registrar-Recorder/County Clerk	11	41
Sheriff	67	182

Treasurer and Tax Collector	14	61
Total	395	1606

These systems are spread over 64 data centers within the county (see Table B, page 58) and at least three private data centers outside of the county: UNISYS Data Center in Eagan, Minnesota; a Northrop Grumman Data Center headquartered in Virginia; and a Cerner Data Center in Kansas City, Missouri.

The original Department of Data Processing was renamed Information Technology Services (ITS). It is now part of the Internal Services Department (ISD) because it services county agencies, rather than the public. ITS charges for its services. The ITS Data Center in Downey is still the largest data center and provides for comprehensive disaster recovery. The other 63 county data centers and the three private data centers are supported by their respective department and agency budgets and are therefore not part of ISD.

As a result of this decentralization, there is a lack of standardization in production among the many data centers, and there is a lack of standard system development procedures among county departments and agencies. The systems cannot easily exchange information because the data characteristics are not standard, and management oversight of county data and information system functionality is much more difficult.

1. Back to centralization

During this era of decentralization, the county took two actions to bring some order to this environment.

One action established the Information System Advisory Board (ISAB). Its purpose was to coordinate and standardize justice applications and data for the Superior Court, LASD, District Attorney, Public Defender, Alternative Public Defender, Probation Department, police departments, and any other agencies that deal with the justice system. The county CIO is a member of this board.

The departments' conflicting roles were such that each department refused to allow access by the other departments to its records. The result was that rather than a single system to serve them all, each organization developed a unique system to serve its specific needs. ISAB insures that the data the individual departments gather and use can be fluently interchanged with the other justice organizations. ISAB-coordinated systems currently handle more than a million electronic messages per day among departments.

The second county action created the Office of the County Chief Information Officer. The CEO and CIO stated that two purposes of this action were to bring standards to all county

information systems and to provide a vision for information systems across county organizations.

The Office of the Chief Information Officer was created by the Board of Supervisors in 1995.[1] The county CIO's duties were defined by the board as follows:

A. Provide professional guidance and advice on countywide information technology activities to the Board of Supervisors, county departments, and county information technology bodies.
B. Review and make recommendations concerning proposed major information technology projects of county departments, and county information technology bodies. It is the responsibility of county departments and county information technology bodies desiring to pursue major information technology projects to submit such proposals to the office for review and recommendations.
C. Adopt standards for countywide information technology which shall be subject to approval by the Board of Supervisors. County departments and county information technology bodies shall adhere to such standards.

In 1997 the Board of Supervisors clarified and expanded the county CIO's role by establishing a policy requiring that all requests on the board agenda concerning approval of any actions relating to the design, acquisition, expansion, or purchase of any automated systems be reviewed by the county CIO prior to being placed on the agenda.

The county CIO categorized various departments and agencies into five clusters based on services. In some groupings—such as the Children and Families Well-Being Cluster, Operations Cluster, and Health and Mental Health Services Cluster—the clustering serves the same purpose as the ISAB committee for justice-related systems—that is, to standardize and facilitate data exchange among departments with similar service populations. The county CIO is working to standardize data across all clusters.

The clusters are as follows:

Public Safety Cluster

Agricultural Commissioner/Weights & Measures
Alternate Public Defender
District Attorney
Fire Department
Information Systems Advisory Board
Medical Examiner–Coroner

[1] Los Angeles County Code, Title 2, Chapter 2.119.

- Probation
- Public Defender
- Sheriff

Community and Municipal Services Cluster
- Animal Care and Control
- Arts Commission
- Beaches and Harbors
- Community and Senior Services
- Consumer Affairs
- Parks and Recreation
- Public Library
- Public Works
- Regional Planning

Operations Cluster
- Assessor
- Auditor-Controller
- Board of Supervisors
- Chief Executive Officer
- County Counsel
- Human Resources
- Internal Services Department
- Registrar-Recorder/County Clerk
- Treasurer and Tax Collector

Children and Families Well-Being Cluster
- Children and Family Services
- Child Support Services
- Public Social Services

Health and Mental Health Services Cluster
- Health Services
- Public Health
- Mental Health

The county CIO has created a council, which brings together the CIOs of all the above-listed departments. This council meets every other month to exchange information and discuss suggested improvements. The county CIO has also created a Leadership Committee, composed of representatives of individual departments that have major systems. The Leadership Committee meets monthly to oversee the countywide information systems effort and formulate standardization and enhancements for the countywide information systems.

The CIO Leadership Committee is composed of representatives of the following 15 members:

Chair: County CIO
Standing Members
- General manager of Information Technology Services
- Executive Office of the Board of Supervisors
- Chief executive officer

Operations Cluster
- Auditor-Controller
- Human Resources

Public Safety Cluster
- Information Systems Advisory Board
- District Attorney
- Sheriff

Community and Municipal Service Cluster
- Public Library
- Public Works

Health and Mental Health Services Cluster
- Health Services
- Public Health

Children and Families Well-Being Cluster
- Children and Family Services
- Social Services

2. Current trend

Many county departments, apparently in line with industry trends, are consolidating their various systems into a more comprehensive "enterprise system." Examples of this trend toward consolidation include the Auditor-Controller, Assessor, DPSS, and DHS.

The CEO and a high-ranking manager of ITS advocate for more countywide consolidation of development and production. The manager and CEO point to economies of scale to support their positions. Consolidation also simplifies management.

The CEO stated a county department might want the benefit of the experience of an outside contractor for building a new application. Development is a onetime endeavor, whereas a system may have a production life of many years. The CEO stated that all production should stay within the county and should be centralized for ease of management.

ITS has created a county cloud called the eCloud to provide central processing, automatic backup, and disaster recovery for other departments. This eCloud centralizes production while leaving system development and software maintenance and support with the individual departments and agencies.

3. Security centralization

Los Angeles County information systems comprise various shared computer systems and networks. Keeping them free from hacking and viruses, and keeping the contents confidential and immune to theft, are a large part of systems security. Ready access to data is essential for county operations. However, no person or persons with permissive access to only one type or one segment of data should have inadvertent access to part or all of the rest.

The county CIO appointed a chief information security officer (CISO) to coordinate and standardize the countywide security efforts. The county CIO, the CISO, and the members of the Leadership Committee and the other departmental CIOs work together to establish common policies and standards for security.

According to the county CIO, the county systems are attacked at a rate of hundreds of thousands of attempts per year. Breaches of security can result in a range of issues, from damaged countywide systems through individual identity theft. A breach of security could result in violations of law. The county office of the CIO has worked to strengthen and standardize security across county systems, including via encryption. Encryption is a means of ensuring that information, even if accessed, is not decipherable by unauthorized or unintended recipients. Data transmitted between county departments are encrypted; data available to the public, such as on county websites, are unencrypted.

The office of the CIO pushed encryption of data security further, to include data stored on portable computers, such as notebooks and laptops. Such computers may be taken out of the office and become vulnerable to unauthorized accessing of the data.

Security must conform to a variety of standards—including state and federal regulations such as Criminal Justice Information Services (CJIS) standards provided by the Federal Bureau of Investigation and the federal Health Insurance Portability and Accountability Act (known as HIPAA).

HIPAA created national standards for the security of electronic protected health information. HIPAA violations can result in harm to individuals and form the basis of costly lawsuits against the county, city, department, or agency involved. For example, a massive-scale information breach occurred earlier this year when the health insurer Anthem, Inc., was hacked, causing data breaches that affected approximately 80 million subscribers.

4. Email centralization

The county CIO stated that, with his Leadership Committee's and CIO Council's approval, an arrangement had been made to replace all of the electronic mail software used by each county department or agency with just one electronic mail system provided by Microsoft, resulting in a significant financial savings.

The Microsoft email system was originally to be hosted by the county but was subsequently replaced by the Microsoft Office 365 for Government edition hosted by Microsoft. The county chose this version because this package includes a variety of Microsoft desktop software incorporated into the single contract.[2] The county CIO is quoted as saying, "We saw Office 365 as an opportunity to leverage the additional technology and also relieve us from the burden of having to manage email and continue to acquire hardware for storage and software licenses." Ultimately, he has said, "This is going to make life a lot easier for us."

This decision sparks concerns about the security of county email and other county data stored on the Microsoft cloud. The county CIO said, "The county selected Microsoft, in part, because Office 365 solution is compliant with both the Criminal Justice Information Services standard and the Health Insurance Portability and Accountability Act."

He further stated, "The compliance standards were always a major issue for us as our law enforcement personnel need a system with the proper security procedures in place in order to work with the rest of the county. When our sheriff's office learned the system was CJIS compliant, they studied it in detail and were encouraged with the security provisions in place."

The CGJ's IS committee noted that all of the county email and office data will be in the hands, be it good or otherwise, of a private, high-profile company rather than being on the county cloud. Security may not be best maintained by storing data with a private company out of county control.

According to some departments, centralization and standardization might not suit their methods of operation. The Fire Department stated it will not centralize email until security is changed to accommodate its operational needs.

5. Data standardization

[2] The package includes SharePoint, Exchange Online, and Office (Excel, Word, PowerPoint, OneNote).

The county CIO has appointed a chief data officer to coordinate and standardize the countywide data so the data can more easily be understood and exchanged among the various agencies and departments of the county. Information Systems Advisory Board (ISAB) had been the pioneer in that area. In addition to this primary purpose of data exchange, this would facilitate data mining or "analytics." Analysts would analyze data on various county services to determine trends that would allow the county to predict its needs and better distribute its resources.

The county CIO proposes standardizing all data elements across all information systems and to track all services provided to citizens of the county, possibly even using a unique identifier for each citizen.

The county CIO and the Leadership Committee have recommended that the county standardize on three relational databases: IBM's DB2, Microsoft's SQL, and Oracle. According to the CIO, he has no plans to upgrade older, legacy applications with relational databases. Instead, he said, they will be replaced.

6. Production centralization

When a system has been developed and tested, it goes into regular production at a data center. As stated before, there are 64 county data centers and at least three private data centers outside of the county. The 64 county data centers are listed on the following table:

TABLE B
Data Centers

Department	City	Site Name	Appx Sq Ft
Ag Comm	South Gate	South Gate	100
Ag Comm	Arcadia	Arcadia HQ	100
Alternate Public Defender	Los Angeles	HOR	100
APD and Public Defender	Los Angeles	Airport Courts	100
Assessor	Los Angeles	Assessor Data Center	450
Assessor	Signal Hill	South District DR Site	100
Auditor-Controller	Los Angeles	HOA	400
BOS Exec	Los Angeles	BOS-HOA	400
CEO and Auditor	Los Angeles	HILL	100
Chief Executive Office	Los Angeles	OEM	100
Chief Executive Office	Los Angeles	WIL	400
Chief Executive Office	Los Angeles	HOA	400
Child Support Services	Los Angeles	Commerce - HQ	100

Child Support Services	Encino	Encino	100
Child Support Services	Los Angeles	Commerce - Mail	100
Child Support Services	Torrance	Torrance	100
Child Support Services	Los Angeles	Commerce - HQ	100
Coroner	Los Angeles	FDIS	30
County Counsel	Los Angeles	HOA	100
County Counsel	Monterey Park	CSD	30
DCFS	Norwalk	Norwalk	100
Human Resources	Los Angeles	Wilshire	30
Human Resources	Los Angeles	HOA	30
DHS Harbor UCLA	Torrance	Harbor UCLA	2000
DHS High Desert	Lake Los Angeles	LLAC	30
DHS High Desert	Lancaster	AVHC	100
DHS High Desert	Lancaster	HDHS	400
DHS High Desert	Littlerock	LRC	30
DHS High Desert	Palmdale	SVMC	100
DHS HSA	Los Angeles	HSA	2200
DHS LACUSC	Los Angeles	D&T	2000
DHS LACUSC	Los Angeles	OPD	2100
DHS MLK	Los Angeles	MLK	2200
DHS Olive View	Sylmar	OVMC	1500
DHS Rancho	Downey	100-012	400
District Attorney	Cerritos	Cerritos System House	100
District Attorney	Los Angeles	Foltz CJC	100
Public Works	Arcadia	Annex	1500
Fire	Los Angeles	FCC	1600
Internal Services and Probation	Downey	Downey Data Center	29400
Mental Health	Los Angeles	HQ Annex	100
Mental Health	Los Angeles	HQ	1500
Parks	Baldwin Park	East Agency	30
Parks	Castaic	North Agency	30
Parks	Los Angeles	South Agency	30
Parks	Los Angeles	South Vermont Avenue	50
Parks	Los Angeles	South Vermont Avenue	30
Probation	Arcadia	Probation Riverview	100
Public Defender	Los Angeles	Lynwood	30
Public Health	Arcadia	Fremont-SAPC	400
Public Health	Commerce	Ferguson	400
Public Health	Downey	Downey-LAB	100
Public Health	El Monte	Telstar-CMS	400
Public Health	Los Angeles	Commonwealth-OAPP	400
Public Library	Downey	LHQ	1500
Public Library	Hawthorne	Holly Park	100
DPSS	City of Industry	DPSS Crossroads	400
DPSS	Norwalk	DPSSITD	400
Regional Planning	Los Angeles	HoR 11th Floor	100
Registrar-Recorder/County Clerk	Norwalk	RRCC Norwalk	1500

Sheriff	Monterey Park	Monterey Park	2400
Sheriff	Norwalk	Norwalk	4000
Treasurer and Tax Collector	Los Angeles	CSS 6th St.	400
Treasurer and Tax Collector	Los Angeles	HOA HC	400

Each data center is independent of the others, and so are its production availability and quality standards.

As can be seen on the following table, some county departments have multiple data centers. The Department of Public Health, Child Support Services, and Parks have five each. DHS has the most with 12 and is now using a 13th, private center to run its new patient-following system.

The ITS data center in Downey is the original data center and the largest of them, at approximately 29,000 square feet. Note the size comparison below with the other county data centers: 35 of the 64 centers are 100 square feet or less, and 12 centers are 50 square feet or less, about the size of a closet.

Data Center Size	Number of Centers
30–50 square feet	12
100 square feet	23
400–450 square feet	15
1,500–1,600 square feet	6
2,000–2,400 square feet	6
4,000 square feet	1
29,000 square feet	1

On Nov. 12, 2014, the Board of Supervisors ordered a study on moving the Downey data center to a more secure site and consolidating “most” of the other data centers at that site. The location under study is an unused portion of the Rancho Los Amigos Hospital property, in Downey.

As mentioned above, the CEO has stated he sees occasional need for outsourcing project development but not production. “Development is a onetime expense. A system may have a production life of many years,” he said.

Part of production is backup. Backup includes several aspects. At the simplest, there is backup power so the machines don’t shut down in a blackout. Data must also be backed up in case there is an equipment failure causing a loss of data on storage media. Software must also be backed up in case of equipment failure, especially if the programs have been modified or configured.

For restart after a hardware failure, data and software are recovered and the computer restarted. In a catastrophic failure, when the computer cannot be restarted, the system is recovered at an alternative site. The most-sophisticated backup, called "fully active," involves continuous simultaneous updating of two separate data centers—so that if one fails, the other takes over.

An essential feature of the ITS Data Center is its backup capabilities. ITS provides data and software backup, power backup, and processing backup for its Data Center, as well as "fully active" backup for those systems processing on the eCloud. In case of disaster, the county systems would operate out of the Orange County Data Center in Santa Ana. The ITS Data Center serves as the location for the Orange County backup center. The county's lease agreement with Orange County provides that each will house the other's backup.

ITS reports that one third of the county's 64 data centers don't have power backup. ITS currently offers a UPS (uninterrupted power supply) backup for 30 minutes, plus generators for long-term support.

Some of the data centers perform backup daily or weekly. ITS performs daily backup of all data and transaction-by-transaction backup of all systems. Departments that run their software at ITS get the benefit of these backup services, while retaining control of their software if they so choose.

One department said that there was a failure in one test of the Orange County backup that the department participated in last year, and thus the department insisted on continuing to use a private data center. Other departments and ITS report that ITS backup tests have been successful.

A lack of confidence in the ability of the ITS and Orange County centers to simultaneously withstand a major disaster is one of the reasons given by DPSS, Fire, and DHS for paying for private data centers outside of California to host their new systems. However, one department reluctant to centralize conceded it had not commissioned any geological studies to support its concerns. ITS has commissioned outside studies and found that the likelihood of both sites going down simultaneously is "minimal."

Departments complain about the cost of using ITS because of its price structure. The Board of Supervisors has mandated that ITS operate as a charge-back unit. This means ITS must charge those departments with which it contracts for its costs, including overhead. Departments the CGJ IS Committee spoke with complained they were getting services they could have purchased directly but were paying 33 percent extra for ITS's overhead.

ITS responded that its overhead costs are explicit, whereas departments don't take into account their own overhead when looking at the cost of doing it themselves. The additional factor of keeping jobs in Los Angeles, rather than moving to out-of-area facilities, should be considered.

In addition, removing ITS's ability to charge for overhead on its services may result in a decline in its funds and eventual shrinking of, or elimination of, ITS.

Departments complain about ITS's unresponsiveness or slow responses to requests for service. This complaint, however, has existed since the early days of the county's Department of Data Processing. This represents an inherent tension between centralization and local control.

Although LASD runs certain large critical systems at ITS, an LASD representative expressed concern that ITS does not meet the CJIS standard and said a significant percentage of ITS staff does not pass FBI background investigations. As a result, other of the LASD's large systems are running at LASD data centers.

7. Programming languages standardization

Los Angeles County departments use many different programming languages and programming techniques to create the software to direct the performance of the many different computers.[3]

Selection of a language to use on a particular project is a departmental decision; there is no countywide guidance. Systems require maintenance. If the systems are developed in too many languages, that creates a burden on maintenance.

Because many of the county departments make their own decisions about programming and support staffs, or they contract out program development, there is no common standard for the selection of a programming language or rules or guidelines on how to use each language. There are also no common standards for program design, program coding, or writing of program specifications. The county CIO reviews almost all system requirement documents and system specifications, but not program specifications, and certainly not program design or code.

[3] Among languages used by the county are COBOL, Java, C#, Structured Query Language (SQL), HTML and JavaScript ColdFusion, C++, GIS, PHP, JSP, JQuery, CSS, ASP.NET, Cognos, and AJAX. The county may use even more than these 16 languages.

Many older, mission-critical systems are written in COBOL. Many departments regard the systems written in COBOL as obsolete because COBOL was developed in 1959 and because the departments cannot find COBOL programmers to update the systems with new features; but, the departments love the reliability of the systems. Many departments seek to replace the COBOL systems with systems written in programming languages that are currently taught in schools. [4,5]

According to ISD, COBOL is not obsolete.[6] It was revised as recently as 2002 to expand its capabilities, and another COBOL revision awaits approval for its 2015–16 version. In 2006 and 2012, Computerworld surveys found that more than 60 percent of organizations used COBOL, more than used C++ and Visual Basic.NET, and that for half of those, COBOL was used for the majority of their internal software. Only 36 percent of managers said they planned to migrate from COBOL, and 25 percent said they would like to migrate if migration were cheaper. Instead, some businesses have migrated their systems from expensive mainframes to cheaper, smaller systems, while maintaining their COBOL programs.

ITS has a large production capacity and more than 200 programmers, and ITS supports COBOL and most of the other programming languages. Rather than spend the funds on outside production and system replacement, departments could transfer existing systems to ITS for production support and system modernization. All of the funds that would be paid to a vendor would now stay within county government.

B. Software Development and Project Management

1. Options for software development

Departments have several options when developing software. They can buy an existing package that does the job or at least comes close. They can buy an existing package that is then customized to meet each department's needs. Or they can have custom software created, in house or by a vendor, to meet their needs.

[4] Computers execute commands in machine code, not in a programming language. The English language–like programming languages are for human use, to make instructing the computer easier, but, in the end, each must convert to machine code that is understood by the computer. It is possible to write a program in multiple programming languages and combine the modules into one program when they are converted to machine code.

[5] LEADER, a major mission-critical system for DPSS, is being replaced with a system developed by a vendor in Java. The Fire Department has extended the contract life of its reliable Computer Aided Dispatch System, written in COBOL, for another five years, but meanwhile it is preparing an RFP for a new system with more capabilities.

[6] COBOL is available on Microsoft, Linix, zOS, Unix, and most computer operating systems.

Existing commercial packages (commercial off-the-shelf or COTS) that have been sold to many users tend to have fewer problems and are presumably cheaper as the cost of development is spread out over multiple buyers. COTS applications have been tested or used by other customers, who have found some of the bugs. However, existing packages often do not entirely fill a department's needs. Sometimes this forces the department to do its business in ways that meet the computer system's needs. In some circumstances, however, the cost savings might warrant that.

COTS programs can be customized to meet the users' needs more precisely. However, the county CIO has pointed out a major problem with COTS applications within the county: Those departments using COTS systems that customize their systems reduce the ability to integrate the commercial upgrades and patches—of special concern to the county CIO if those patches involve security.

Some departments find that COTS software won't meet their needs even with customization. Sometimes this is because the software doesn't have the ability to handle the large workload—many Los Angeles County departments are the largest in the country. Sometimes the local operation is so different from those elsewhere that the COTS modifications are extreme, therefore it makes sense to develop the system from scratch.[7] If custom software must be written, it can be done in-house or through a vendor. The vendor will generally have experience creating similar systems, which is an advantage. To maintain custom software, a department will need either continuing service by a vendor or in-house programming staff.

2. Difficulties in software development

The IT industry has created many large complex systems for users—but not without encountering problems. There is a "long history of IT projects gone awry."[8] Of the interviewees questioned about IT failures, all acknowledged that complex system development, in public and in private sectors, fails too often.

Some are colossal failures. The California Judicial Council statewide court system was budgeted for $260 million when it was started. By 2013, somewhere between $350 million and $500 million had already been spent, and the estimate was that completion would cost

[7] The State Department of Consumer Affairs started a development of a "COTS" (commercial off-the-shelf) system estimated at $28M in 2011. The state Auditor's report (#2014-166) now shows an estimate of $96M as of January 2015 and estimates $300M if the program is extended to all the agencies originally expected to be included. COTS solutions sometimes appear to be cheaper, but the modifications can end up costing more than developing from scratch.

[8] "Why Software Fails" by Robert N. Charette in the Institute of Electrical and Electronics Engineers Spectrum at spectrum.ieee.org/computing/software/why-software-fails, posted September 2, 2005.

about $2 billion. The program was cancelled.[9] The private sector isn't quite as public about its failings, but it fails just as spectacularly. For example, the British company J Sainsbury PLC gave up on a $526 million system.[10]

Sometimes the developers realized early in the process that the project was lacking, and they stopped. This is obviously a far better outcome. But is it a success? More often, in a troubled development project, alternatives are pursued at substantial extra expense and delay. Thus it is hard to gauge whether a development project has been a success.

3. The example of the Assessor

The Assessor's office was very candid about its efforts. It tried to create a joint system with the Auditor-Controller and the Treasurer and Tax Collector in the late 1990s. That effort fell through. In the early 2000s, the Assessor tried to create its own enterprise system, but the range of bids was so wide that the Assessor decided its solicitation was not adequate. It brought in an outside consultant to help design the specifications. The contractor, in conjunction with in-house staff, took more than five years to create the design and about 9,000 specific requirements and business rules. The Assessor brought in another consultant, who said the Assessor was still not adequately prepared to do the project. Simultaneously, the proposed vendors were collapsing. The project was cancelled in 2009.

According to the Assessor, the department needs to upgrade and consolidate because it wants to include a geographic information system (GIS), needs a security upgrade, and considers the existing system difficult to support. The existing mainframe system is set up for batch runs, but the department wants real-time updates and queries, with segments of the system available to the general public on the Web. The Assessor tried to buy COTS software. However, Proposition 13 makes California so different from the other 49 states that the nationally sold software could not accommodate California variations in assessment. Santa Clara County had tried one of the leading COTS packages, but the package failed that county's needs. The Assessor also considered the software developed by other California counties and found them inadequate. The Assessor finally decided to go forward again with developing a system specifically for Los Angeles County.

4. What is success?

Studies of success have been done by various IT industry groups. For a development of a software system to be considered fully successful, it should be fully functional, on time, and

[9] http://www.sfgate.com/bayarea/matier-ross/article/Computer-system-dropped-after-500-million-spent-3450186.php#photo-2241560; http://californiawatch.org/dailyreport/audit-state-courts-computer-system-massively-over-budget-8578; http://www.zdnet.com/article/california-abandons-2-billion-court-management-system/.

[10] Why Software Fails, IEEE Spectrum http://spectrum.ieee.org/computing/software/why-software-fails.