

Information Technology Operations Audit
February 2014

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Information Technology Operations Audit



Office of the City Auditor
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Project #13-06

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Executive Summary

Formalized Project Management Office

Deficiencies in the IT governance structure

Opportunities for Improvement

Identify IT operating capacity

Decrease the number of ITEC members

Improve the IT project prioritization process

Use one-time funds for the purpose noted when funds were requested

Leverage department skills for business analysis

Enhance training provided to IT staff

Apply application-specific IT-related audit recommendations enterprise-wide

As part of the Fiscal Year 2013 Annual Audit Plan, the City Auditor's Office conducted an audit of Information Technology Operations. The audit was conducted in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

The preliminary objective of the audit was to evaluate the effectiveness and efficiency of information technology (IT) operations and processes. However, there was a significant project backlog, and processes to ensure the effective and efficient use of IT in achieving the City's goals were not observed (e.g., no records to adequately support the allocation of IT staffing resources). The City Auditor's Office, therefore, determined that an evaluation of the information technology governance structure was needed before detailed operations could be evaluated.

Lack of an effective time-tracking and project prioritization system prevented the IT Department from determining what projects should have been accepted. As a result, the IT Department has operated in a reactionary mode and has experienced difficulty operating effectively.

The City Auditor's Office concluded that because IT resources were not being tracked, the IT Department was unaware of its capacity that was available to address core IT operations. By not knowing the resource capacity that was available to handle its own needs, the resource capacity available for addressing user departments' needs was also unknown. An unknown IT capacity, combined with an information technology executive committee that was improperly structured, resulted in a project backlog that was unreasonable. The IT Department requested and received additional funding to address the project backlog. However, the City Auditor's Office was unable to verify that the additional funds were utilized effectively.

To help alleviate project backlogs, the IT Department formalized a Project Management Office and hired Business Analysts to function as the “link” or business partner between the user department and the Project Management Office. While the City Auditor’s Office was in agreement with the business analysis concept, the timing by which the Business Analysts were hired appears questionable. Furthermore, some job duties currently assigned to Business Analysts exist within job duties noted in other IT staff’s job descriptions.

Data related to work orders processed via the Help Desk was being tracked. However, the recorded data was not being summarized or accumulated in a manner that would help identify operational (IT and/or user departments) deficiencies. Also, IT staff interviews and review of documentation indicated that employee training is deficient. Staff indicated that this lack of training, significant project backlogs and staff turnover has resulted in low morale and productivity.

Throughout the past 10 years, external and internal audit recommendations regarding the City’s IT operations have been made. Some of those audit recommendations have been implemented and some have not. The City Auditor’s Office noted that in instances where audit recommendations have been implemented, the implementation has been limited to the specific application being audited, rather than being applied across the organization.

These findings and related recommendations are discussed in the Detailed Audit Findings section of this report. It should be noted that the City Auditor’s Office is releasing two versions of this report. One version is the full report for which distribution is limited to the Mayor and City Council and to those who are responsible for acting on the audit recommendations. The other report version is publicly-available. However, the publicly-available report version excludes sensitive information, which if misused, could pose security concerns and potential damage to the City of Arlington.

Audit Scope and Methodology

The audit was conducted in accordance with generally accepted government auditing standards. The following methodology was used in completing the audit.

- Distributed a questionnaire to all City departments regarding IT services
- Interviewed IT staff and staff within user departments
- Reviewed IT staff job descriptions
- Reviewed IT staff training records
- Reviewed IT policies and procedures
- Examined IT time tracking software
- Reviewed prior consultant reports
- Reviewed IT budget documentation

Due to the lack of detailed time records and other documentation, the City Auditor's Office was not able to review the sufficiency of funding for the IT function. Although the IT Department has been recording employee time since 2011 through various methods, the City Auditor's Office found that the data was often not complete and did not account for the time spent on all IT projects. As noted in Finding 1 of this report, the City has recently implemented a decision support tool that can be used to more fully identify the time spent on various IT functions. Because preliminary audit results indicated a need for a stronger governance structure and methodology, the City Auditor's Office determined that the governance issues identified should be corrected before further, more detailed, audit work is conducted.

Audit fieldwork for this review was conducted mainly in the spring and summer of FY2013 and primarily consisted of review of documentation from FY2012 and FY2013. It should be noted that the IT Department has initiated corrective actions or has recommended policy or process changes that may address some of the findings and recommendations included in this report. As these changes were made during or after audit fieldwork, the City Auditor's Office did not review the adequacy of the changes. Within one year of this report, the City Auditor's Office will conduct a follow-up audit to determine the implementation status of the recommendations in this report.

Background

Mission and Goals

As stated in the City's Adopted Budget, the Information Technology Department manages the City's information technology infrastructure and performs strategic IT planning. The department is responsible for:

1. coordinating strategic technology direction for the City, developing common standards, architectures, and business solutions to deliver City services more efficiently and effectively;
2. building and operating the City's corporate communications and computing assets, which include the City's telephone and email systems, networks and servers;

3. building productive relationships within and beyond the Information Technology Department; and,
4. ensuring timely and courteous response to their customer's technology requests.

As noted on the department's City webpage, the mission of the Department is to be the provider of choice to develop impactful technology solutions, which provide positive benefits for citizens and sustainable competitive advantage for its city business partners. Per the 2013 Adopted Budget, the goals of the department are to ensure the availability of information, programs and city services and to improve operational efficiency and increase staffing accuracy.

Budget and Workload

Information Technology activities in the City are budgeted in two separate funds: the General Fund and the Information Technology Support (internal service) Fund. IT Divisions funded via the General Fund are responsible for:

- Department management
- Strategic planning
- Systems and data security
- Business analysis and business development services
- Project management and governance
- Contract compliance and control
- Asset management
- Applications maintenance
- Reporting services
- Geographic Information System operation, maintenance, and development
- Database administration services
- Web services including administration, maintenance and development

IT Divisions funded via the Information Technology Support Fund are responsible for:

- Developing and maintaining electronic communication infrastructure
- Network support
- Server support
- Customer support center
- Desktop computer support
- Remote diagnostic services

The following chart summarizes the growth in the number of personal computers and infrastructure that is maintained by the IT Department:

Growth in Personal Computers and Infrastructure			
	2004	2014	% Increase
Personal Computers	1,571	3,011	92%
Servers	175	319	82%
Storage (Terabytes)	12	640	5233%
Switches	183	310	69%
Firewalls	2	12	500%
Wireless Access Points	6	111	1750%
Fiber (Miles)	36	195	442%

Source: IT Department

The number of annual help desk work orders has increased to 17,517 in 2013 from 7,430 in 2000, a 136% increase. In addition, the IT Department reports that the number of software applications supported by IT has increased to 60, up from 15 in 2004. The following chart summarizes the total budgeted expenditures for the Information Technology Department for the past five fiscal years.

INFORMATION TECHNOLOGY DEPARTMENT BUDGETED EXPENDITURES					
FY2010 to FY2014					
General Fund	Fiscal Year				
	2010	2011	2012	2013	2014
Administration	\$ 744,831	\$ 590,067	\$ 662,733	\$ 587,407	\$ 604,888
Project Management	1,241,516	1,539,757	1,634,523	1,053,334	740,704
Application/Database Support	492,775	186,180	179,608		
Business Services	683,999	663,861	675,796		
Infrastructure				265,817	169,157
Graphical Information Services	302,601	210,930	218,743	-	-
Information Security	431,363	396,206	410,902	63,386	57,968
Business Development				320,017	381,613
Software Services				2,108,353	2,278,664
Web Services	408,105	428,449	450,552		
Challenge Grant		182,289			
	<u>\$ 4,305,190</u>	<u>\$ 4,197,739</u>	<u>\$ 4,232,857</u>	<u>\$ 4,398,314</u>	<u>\$ 4,232,994</u>
Internal Service Fund					
Network Support	\$ 1,983,876	\$ 1,710,354	\$ 1,663,238	\$ 1,787,660	\$ 2,146,116
Server Support	2,283,499	2,204,941	2,516,019	2,779,816	2,871,718
Customer Support	1,836,696	1,767,191	1,839,813	1,944,294	2,375,704
	<u>\$ 6,104,071</u>	<u>\$ 5,682,486</u>	<u>\$ 6,019,070</u>	<u>\$ 6,511,770</u>	<u>\$ 7,393,538</u>
Total Expenditures	\$ 10,409,261	\$ 9,880,225	\$ 10,251,927	\$ 10,910,084	\$ 11,626,532
Pct. Increase	2.05%	-5.08%	3.76%	6.42%	6.57%

Source: Adopted Budgets

The Information Technology Department has implemented a decision support tool that can be utilized to assist management in quantifying current skill sets, capacity and resources needed for future projects. A certain amount of resources are needed for core IT operations such as maintaining existing architecture, upgrading hardware as necessary and securing application software. Additional resources are necessary for expansion categories such as new software and hardware installations.

Staffing

As noted in the following chart, Information Technology Department staffing has remained fairly consistent over the past five fiscal years.

INFORMATION TECHNOLOGY DEPARTMENT STAFFING					
Adopted Budget FY2010 to FY2014					
	Fiscal Year				
INFORMATION TECHNOLOGY GENERAL FUND	2010	2011	2012	2013	2014
Administrative Aide I	1	-	-	-	-
Administrative Aide II	1	1	1	1	1
Administrative Services Manager	1	-	-	-	-
Applications Specialist I	-	4	4	3	3
Applications Specialist II	-	3	3	3	3
Assistant Director IT	1	-	-	-	-
Business Analyst	-	-	-	3	3
Business Process Analyst	-	-	-	1	1
Chief Information Officer	1	1	1	1	1
Data Base Administrator	2	2	2	2	2
GIS Application Developer	1	1	1	1	1
IT Asset Coordinator	-	1	1	1	1
IT Asset Specialist	-	1	1	1	1
IT GIS Supervisor	-	-	1	1	1
IT Manager	2	4	4	3	3
IT Reporting Specialist	1	1	1	1	1
IT Security Administrator	1	1	1	1	1
Knowledge Services Manager	-	1	1	-	-
Operations Analyst II	3	1	1	1	1
Program Supervisor	-	3	3	4	4
Project Coordinator	4	1	1	-	-
Sr Computer Operator	2	2	2	-	-
Sr Programmer Analyst	6	-	-	-	-
Sr Systems Programmer	1	1	1	1	1
System Analyst	1	1	-	-	-
Web Administrator	1	1	1	1	1
Web Developer	1	2	2	2	2
Webmaster	1	-	-	-	-
General Fund Total	32	33	33	32	32
INFORMATION TECHNOLOGY - INTERNAL SERVICE FUND					
Customer Support Coordinator	1	1	-	-	-
Customer Support Specialist	6	6	7	7	7
IT Supervisor	3	3	3	3	3
Network Administrator	-	-	-	5	5
Network Designer	1	1	1	1	1
Network Specialist	3	4	4	-	-
Sr Computer Operator	-	-	-	1	1
Systems Engineer	7	6	6	6	6
Internal Service Fund Total	21	21	21	23	23
INFORMATION TECHNOLOGY DEPARTMENT TOTAL	53	54	54	55	55

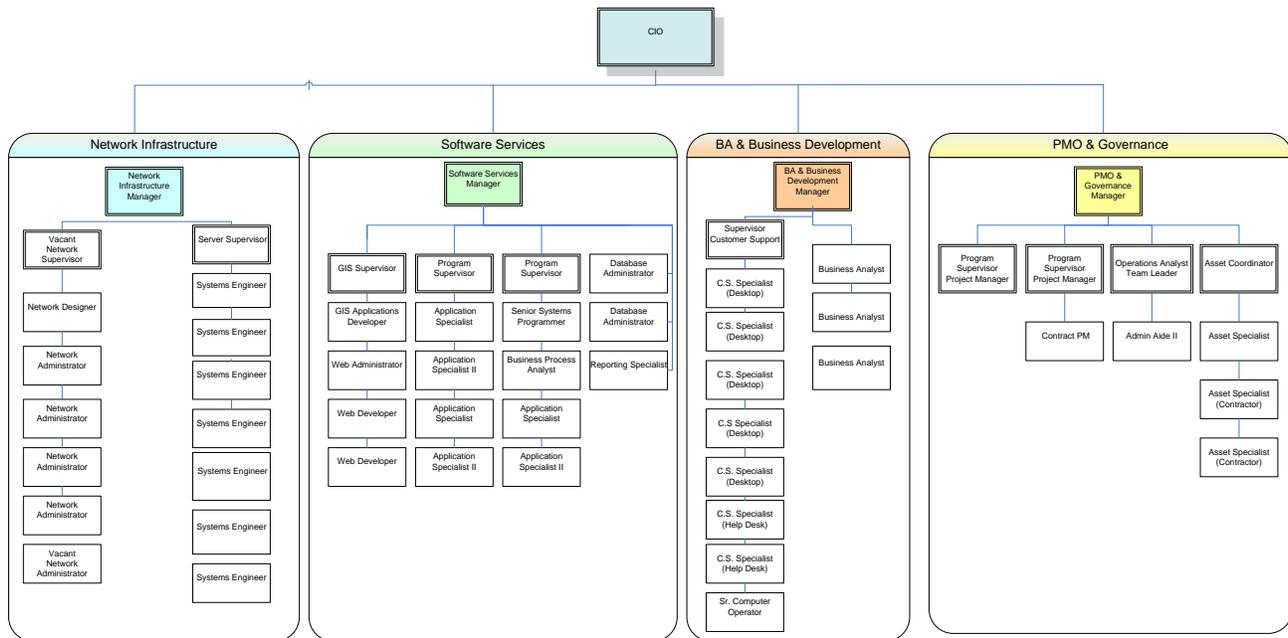
Source: Adopted Budgets, as published on City's website

The 1999 Gartner study found that City departments had decided to hire their own IT staff as a result of dissatisfaction with the City's IT department. IT staff within non-IT Departments (e.g., Police, Public Works and Water) support their own departmental technology, and depend on the City IT Department for its core services such as infrastructure (network, servers), telecommunication needs and major projects such as new technology implementation. Staffing and budgetary information is included in their departmental budget and staff listings and is not always itemized as Information Technology staff. The data shown below was extracted from existing budgetary information and staff input.

Department	Total IT Staff	Skill Sets	Budget
Police	5	DBA, Application development, system specialist, project management	\$554,257
Water Utilities	14	GIS management, GIS technicians, GIS programmers, billing system programmer analysts, PC support staff, project coordinator	1,052,787
Library	3	System administrator, network administrator, PC support staff	295,362
Public Works	5	Asset system operation, project mgmt, GIS, Application programming, Scripting, data analysis and DBA	367,200
Parks	1	Parks system administration	90,437
Total	28		\$2,360,043

The City Auditor's Office did not perform a detailed review of the work performed by technology staff in non-IT Departments. It is not known which, in any, of the positions noted in the chart above are performing work that would normally be the responsibility of a centralized IT Department. The information is presented to give the reader a more accurate representation of total information technology staffing throughout the organization.

Organization Chart



As of September 2013

Source: Information Technology Department

Departmental History

The current IT Department began as the City’s Technology Services (TS) Department. The City’s technology infrastructure was primarily a mainframe environment with limited number of static terminals to interact with mainframes. TS staff primarily consisted of mainframe programmer analysts. City departments/divisions such as Code Compliance, Municipal Court, Police and Water Utilities consisted of internally-sourced and programmed mainframe software, customized for each department.

Computing technology began changing to the current client server architecture in the 1990’s. The department’s name was changed to the Information Technology Department during this timeframe, and the City began its transformation to client server technology by implementing networking capabilities and its first client server applications beginning in 2000.

As Y2K approached and shortly thereafter, the City engaged the services of consultants to assess the state of its technology operations, beginning in 1999 with a study conducted by Gartner, an information research and advisory firm. Key findings of the 1999 Gartner study included:

- below average IT spending when compared to similar municipalities;
- IT staff tasks not aligned with business requirements;
- insufficient resources allocated to maintain base infrastructure;
- lack of an effective IT governance methodology;
- inadequate technology refresh and lack of proactive use of technology;
- low staffing levels, with a projected needed staffing increase of 25% by the year 2005;
- lack of competent staff to move from the mainframe environment to the client server environment;

- lack of coordinated program management and due diligence in the product development life cycle; and,
- poor relationships with other City departments and a “silo” feeling among IT divisions.

A Gartner representative indicated that Gartner’s recommendations were presented to the entire city government. A 2001 IT Performance Report made reference to the Gartner Group Information Management Study continuing to fuel the technology advancements being deployed organization wide. The City implemented some recommendations from the Gartner study, including the establishment of IT governance committees.

In 2003, Secure Commerce Systems (SCS) conducted a network vulnerability study which focused on security, network design and network defenses. Key findings from this study included:

- Poor system access controls
- Lack of citywide security policy and awareness
- Lack of defined security authority citywide
- Lack of a formalized compliance assessment
- Lack of a documented disaster recovery and business continuity plan
- Lack of formalized software patching and security risk mitigation
- Poor asset classification and controls
- Inadequately secured network parameter
- Network susceptible to outside attack
- Flat network topology

The City Auditor’s Office was unable to find any evidence of the SCS study findings being presented to the City’s executive management or elected officials. However, the City’s Information Technology Department implemented parts of recommendations such as better access controls and creating a more robust and redundant network topology between 2005 and 2009. After security breaches to the City’s Treasury Division and the AMANDA permitting application, the City took steps to adequately secure the network. The City introduced network monitoring and intrusion detection in 2012.

Current Status of the Information Technology Department

As previously stated, the City Auditor's Office identified a 1999 consultant report that commented on the status of the IT Department at that time. The report identified a lack of an effective department-wide governance methodology and a lack of qualified staff that had the ability to meet the City's changing business and IT needs. Gartner also noted that the City had adopted a strategic plan that would change the IT Department's role in the City from reactive (supporting City operations) to proactive (enabling the City to more effectively serve its citizens). The study also recognized that differences in department funding levels, project prioritization and resource allocation had created disparity in information services capabilities across the city, straining the relationship between the IT Department and City departments. The consultants also identified multiple technology and infrastructure deficiencies. Although the findings noted within the study were significant, only recommendations regarding the establishment of information technology committees were addressed by management. The City Auditor's Office concluded that the non-implementation of a majority of the 1999 recommendations has resulted in an IT foundation that is unable to sustain growth and meet the City's business objectives.

Based on IT staff interviews, surveys of other departments, review of prior consultant and internal audit reports and observations of IT operations, the City Auditor's Office formed an opinion on the current status of the IT Department. While the opinion is generally supported by the work performed, the reader must be careful to remember that a significant scope limitation exists regarding the inability to adequately assess the resources spent (and available) on core IT operations and expansion projects.

Project Backlog

Most user departments expressed dissatisfaction with IT's ability to deliver projects. Departmental comments ranged from IT not having the resources to assist in project evaluation and implementation to opinions that the project prioritization process was unreasonable and in need of a complete overhaul, with established accountability.

In May 2012, the Chief Information Officer (CIO) informed the Information Technology Executive Committee (ITEC) that 116 projects existed and that the projects represented an estimated six (6) years of work. Subsequently, the CIO met with department directors to help determine IT's highest priorities. The CIO estimated that there were twice as many requests than the IT Department could handle within the next six months.

There is general consensus throughout the City that the number of desired projects exceeds the IT Department's capacity. Delayed, postponed and/or canceled projects have resulted in IT customers becoming more skeptical of IT's ability to deliver projects. The City Auditor's Office found little indication that the IT Department has been able to quantify this lack of capacity.

Over the years, the IT Department has utilized several different methods for tracking the status of technology projects. However, it was generally recognized that the City did not have adequate tools in place to measure the City's data-driven environment, as noted by the CIO in a January 2013 ITEC meeting. In April 2013, the IT Department implemented a decision support tool (Project Portfolio

Management from Innotas) that will be utilized to manage projects and provide meaningful updates and resource availability to executive management. Innotas will allow the IT Department to track requests from inception to completion, and includes resource-demand and resource-capacity components to constantly assess the ability to allocate resources and manage on-time and on-budget completion of projects.

The City Auditor's Office performed a cursory review of the Innotas Project Portfolio Management software and determined that the software appears to meet the needs of the IT Department. The software will allow IT to compute capacity, determine the availability of specific skill sets, track staff time on projects and manage large technology projects in order to finish them in a timely manner. Since the software was in the early implementation stage during audit testing, a more thorough analysis of the software was not performed.

IT's Project Management Office is responsible for tracking projects. The number of projects at various points in time, per the IT Department, is indicated below:

- In May 2012, IT indicated that there were 116 projects.
- In June 2012, IT indicated that there were 59 projects. The City Auditor's Office was informed that the project reduction from May 2012 to June 2012 was a result of the CIO re-prioritizing projects after meeting individually with Department Heads.
- In May 2013, IT's project listing contained 72 active projects. Fifty nine (59) projects from the June 2012 report were also included in the May 2013 report. The following chart shows how the reported status of those 59 projects changed between June 2012 and May 2013:

Project Status	# of Projects
"In Progress" on both reports	15
From "In Progress" to "Completed"	13
"Completed" on both reports	10
From "Business Analysis" to "In Progress"	4
From "Technical Review" to "Completed"	3
From "Business Analysis" to "Completed"	3
"Business Analysis" on both reports	3
From "Technical Review" to "In Progress"	2
From "Business Analysis" to "On Hold"	2
From "Business Analysis" to "Rejected"	2
"Technical Review" on both reports	1
"In Progress" to "On Hold"	1
TOTAL:	59

- In August 2013, the IT Department indicated that it had 11 active and 48 projects that were in progress.

Since the number of active projects, per the IT Department, has decreased significantly (e.g., from over 100 to less than 70), projects seem to have been re-prioritized to a more manageable level. However, the City Auditor's Office noted that the prioritization did not go through the documented process (ITEC) that was in place at the time. See Finding #3. The CIO indicated that some of the decrease was due to IT redefining what was considered a "project". For example, per the CIO, some former projects were reclassified as work orders or fast path assignments.

Funding

The IT Department has created and presented various budget issues to City management in an attempt to obtain increased funding to support core operations and to complete development projects. Within this audit report, core refers to basic tasks that are required to maintain day-to-day operations such as network maintenance, server patching, inventory tagging, etc. Project refers to tasks other than those considered to be core operations.

For FY2014, the department received funding for over \$1.5 million of their new budget requests. As noted within the following chart, a majority of the additional funding was for "costs to continue".

For example, the \$120,959 General Fund transfer represents an amount transferred to the IT Technology Support Fund (from user departments) to purchase additional personal computers for those particular departments. On the other hand, \$244,737 was provided to contract with outside staff that was needed to assist with the infrastructure workload, per IT.

Approved Budget Requests FY 2014		
Budget Issue Description	Task	Amount
Lawson upgrade consulting services	Project	\$ 250,000
Hardware Licensing and Maintenance Increases	Core	32,147
Enterprise Software Licensing and Maintenance Increase	Core	176,629
General Fund transfers	Core	120,959
Server, Storage and UPS Replacement	Core	241,508
Windows 7 Upgrade	Project	450,000
Staff Augmentation for IT Infrastructure	Core	244,737
Total Approved Requests		\$ 1,515,980

In addition to the FY2014 approved requests, the IT Department submitted requests for \$400,000 for an IT security program and \$225,000 for security monitoring and log management, both to address recommendations made within CLA's security analysis. These requests are currently deferred and will be funded only if resources become available. Several IT requests were declined, as shown in the following table.

Declined Budget Requests FY 2014		
Budget Issue Description	Task	Amount
IT Business Analyst	Project	\$ 125,000
IT Business Analyst Ongoing Training	Project	6,900
Professional Services - Business Analyst	Project	125,000
IT Customer Service Division Realignment and Classification	Core	125,000
IT Security - Asset Management Inventory Improvement	Core	175,000
IT Help Desk Vendor	Core	400,000
Microsoft Office Upgrade	Core	375,000
Professional Services for Project Management and Administration	Project	540,000
Professional Services for Infrastructure Support and Maintenance	Core	80,000
Technical Training - Microsoft Server	Core	9,250
Planned Enterprise IT Hardware Replacement	Core	800,000
Professional Support for PC Support Augmentation	Core	200,000
Total Declined Requests		\$ 2,961,150

As noted in Finding #4, the IT Department requested and received additional funding for project implementations, staff augmentation and security in FY2012 (\$250,000) and FY2013 (\$300,000).

The City Auditor's Office conducted a comparison of IT funding at other Texas cities. The comparison was based only on staff within the IT Department. It did not include IT staffing housed within non-IT departments. For example, in Arlington, IT staff employed by the Police and Water Utilities Departments does not report to the IT Department, and is therefore not included within the IT Department's budget or staff count. The City Auditor's Office noted that the other cities reported public safety and utilities technology staff within their IT staff count. While variances between the cities in the survey exist, the City Auditor's Office believes that the chart can be used to get a relative picture of the amount of IT spending at the City compared to other Texas cities.

	Carrollton	Plano	Austin	Dallas	San Antonio	Arlington	Irving	Fort Worth	Grand Prairie
Population	119,097	259,841	790,390	1,197,816	1,327,407	365,438	216,290	741,206	175,396
IT Staff Count	1 (IT Outsourced)	51	300	230	229	54	45	127	24
IT Budget	\$5,868,380	\$ 13,120,936	\$ 65,256,300	\$ 72,873,443	\$ 55,064,656	\$ 10,910,084	\$8,854,391	\$ 23,916,653	\$ 4,269,310
Total City Employees	801	2,058	12,331	14,434	12,331	2,558	2,235	6,461	1,168
Dollars per Employee	\$ 7,326	\$ 6,376	\$ 5,292	\$ 5,049	\$ 4,466	\$ 4,265	\$ 3,962	\$ 3,702	\$ 3,655
City Employees per IT employee	N/A	40	41	63	54	47	50	51	49
Dollars per Citizen	\$ 49	\$ 50	\$ 83	\$ 61	\$ 41	\$ 30	\$ 41	\$ 32	\$ 24

Performance metrics (2012) by Gartner show an average IT spending per employee of \$7,100 as an industry average for municipalities. However, data for Texas municipalities does not indicate that trend, with the exception of Carrollton, which consists of an entirely outsourced IT operation with one staff member (Chief Technology Officer) on its regular payroll. It should be noted that the City of Austin includes a large IT staff associated with their citywide wireless initiative. Arlington's technology budget in terms of dollars per employee and its ratio of city employees to IT employee is around the midpoint of the cities included in the survey. Only Grand Prairie expends less technology dollars per citizen than Arlington.

As noted earlier, the IT Department was approved for an additional \$1.5 million in expenditures for FY2014. While the additional funds were mostly for costs to continue, IT expenditures will increase further, per employee and citizen. As such, it is critical that City management requires that the IT Department conduct a thorough IT capacity and needs assessment after sufficient data is captured in the newly implemented decision support tool.

Staffing

IT staff interviewed by the City Auditor's Office stated that low staffing and competency levels are negatively affecting the IT Department's productivity. As previously mentioned, the 1999 Gartner study concluded that the City had low IT staffing levels. Within the study, Gartner made reference to 90 IT employees, which included technology staff in other City departments. Since budgetary documents from 1999 did not itemize IT staffing within other departments, the City Auditor's Office was unable to determine the total number of IT staff during this period. Budgetary documents only listed separate technology staff for the IT, Police and Water Utilities departments.

Gartner summarized their 1999 findings associated with staffing as shown below:

- IT staffing is 20% below other City governments
- Arlington IT staff to total city employee ratio is 25% less than other City governments

As noted previously within the Background section of this report, the IT Department consists of 54 staff members. The comparison chart on page 15 indicates that Arlington IT staffing levels are not significantly lower than comparable cities. It should be noted that the City Auditor's Office did not determine the existence or extent of project backlogs with the other cities used in this comparison.

Leadership and Morale

Based on observations and interviews with IT and City staff, there appears to be a consensus that morale is low, impacting both productivity and effectiveness. Some IT staff members noted that turnover is an issue and that the "revolving door" of Chief Information Officers has led to apathy regarding management's leadership ability.

A survey of departments indicated that delays were experienced with the completion of what may be considered as non-major tasks (e.g. new employee network IDs, computer replacement, getting phone numbers changed, etc.). Because of the delays experienced, some departments were of the opinion that the IT Department's workload could be lightened if IT allowed user departments to support their own IT needs that are of a low level. Department feedback also indicated that IT resources do not allow for regular upgrades in a timely manner. Departments unanimously indicated that IT's staffing resources are unable to meet increased demand of the networked environment and that the IT Department is currently working in a very challenging environment.

The City Auditor's Office also received positive comments from the user departments. Some departments mentioned that specific IT staff members were very helpful and attentive to their departmental needs, while others saw IT's first line staff as a key asset working in a challenging environment.

IT management indicated that it is difficult to attract and retain quality employees due to low pay and overworked conditions. The City Auditor's Office reviewed employee terminations and found that turnover appeared to be a significant item only for the Chief Information Officer, Systems Engineer and the IT Supervisor positions, as shown in the following chart:

Information Technology Turnover 2008 - 2013						
Title	Authorized	Since FY 2008		As of 8/16/2013	Turnover Ratio	Average Tenure
	2013	Terminated	Hired	Active		
Administrative Aide I	-	-	-	-	-	-
Administrative Aide II	1	-	-	1	0.00%	6.36
Administrative Services Coordinator II	-	1	-	-	0.00%	-
Administrative Services Manager	-	-	-	-	0.00%	-
Applications Specialist I	3	1	-	3	33.33%	13.89
Applications Specialist II	3	1	4	3	33.33%	2.87
Assistant Director IT	-	2	-	-	0.00%	-
Business Analyst	3	-	3	3	0.00%	0.23
Business Process Analyst	1	-	-	1	0.00%	13.30
Chief Information Officer	1	2	1	1	200.00%	1.93
Customer Support Coordinator	-	-	-	-	0.00%	-
Data Base Administrator	2	-	-	2	0.00%	19.09
Data Base Administrator Webmaster	-	-	-	-	0.00%	-
GIS Application Developer	1	1	-	1	100.00%	7.90
IT Asset Coordinator	1	-	-	1	0.00%	11.97
IT Asset Specialist	1	-	-	1	0.00%	7.26
IT GIS Supervisor	1	-	-	1	0.00%	14.98
IT Manager	3	2	3	3	66.67%	5.70
IT Project Manager	-	-	1	2	0.00%	13.27
IT Reporting Specialist	1	-	1	1	0.00%	4.48
IT Security Administrator	1	-	-	1	0.00%	17.97
Knowledge Services Manager	-	-	-	-	0.00%	-
Operations Analyst I	-	-	-	-	0.00%	-
Operations Analyst II	1	1	-	1	100.00%	7.69
Program Supervisor	4	1	2	2	25.00%	5.86
Project Coordinator	-	2	-	-	#DIV/0!	-
Sr Computer Operator	-	1	-	-	#DIV/0!	-
Sr Programmer Analyst	-	-	-	-	#DIV/0!	-
Sr Systems Programmer	1	-	-	1	0.00%	30.56
System Analyst	-	-	-	-	#DIV/0!	-
Systems Analyst Geoprocessing	-	-	-	-	#DIV/0!	-
Web Administrator	1	-	-	1	0.00%	15.50
Web Developer	2	-	-	2	0.00%	13.25
Webmaster	-	-	-	-	#DIV/0!	-
Customer Support Coordinator	-	-	-	-	#DIV/0!	-
Customer Support Specialist	7	4	4	7	57.14%	5.83
IT Supervisor	3	3	5	2	100.00%	5.39
Network Administrator	5	2	1	4	40.00%	11.43
Network Designer	1	-	-	1	0.00%	20.67
Network Specialist	-	-	-	-	#DIV/0!	-
Sr Computer Operator	1	-	-	1	0.00%	28.05
Systems Engineer	6	9	10	4	150.00%	4.12
Systems Specialist	-	1	-	-	#DIV/0!	-
Total	55	34	35	51	61.82%	9.28

During a five-year period, the CIO position experienced a 200% turnover rate, while the position of Systems Engineer experienced a 150% turnover rate and the position of IT Supervisor experienced a 100% turnover rate. Documentation was not available to determine whether compensation, dissatisfaction with working conditions, or some other factor(s) contributed to the high turnover rates.

Salary information for a sample of IT positions surveyed by the City's Workforce Services Department is listed below and indicates that Systems Engineers and IT Supervisors at the City receive slightly lower salaries than their counterparts at other metroplex cities. The compensation survey conducted by the City's Workforce Services Department identified the overall pay variance for civilian city employees to be 1.42% less than other municipalities in the Dallas-Fort Worth area. The survey results were based on a sample of 77 out of 576 existing citywide positions, including six positions in the IT Department, as noted in the chart below. It should be noted that the variance in Data Base Administrator salaries may be attributed to long-tenured staff, as noted in the chart on page 18 of this report.

Position Title	Arlington Avg. Salary	Area Municipal Avg.	Variance
Customer Support Specialist	\$52,369	\$53,129	-1.45%
Web Developer	\$72,052	\$67,771	+5.94%
Network Administrator	\$65,685	\$67,322	-2.49%
Data Base Administrator	\$91,133	\$78,252	+14.13%
Systems Engineer	\$72,185	\$78,023	-7.50%
IT Supervisor	\$82,555	\$86,327	-4.40%

Source: Workforce Services Department

A July 2013 employee survey indicated that IT personnel are less satisfied with their current job and with the City as an employer compared to other City employees. The survey also indicated that IT employees are less satisfied with the quality of work produced in their department and rated supervision in their department lower on fairness, trust and keeping employees informed. City management intends to work with departments to develop plans to address areas identified as needing improvement.

Organizational Structure

The lack of personnel resource analysis, evidence of services not meeting customer needs, and lack of a clear roadmap for future operations did not support or justify the need to completely centralize the IT function. Instead, the City Auditor's Office concluded that IT should remain as a hybrid model and place emphasis on issues within the IT Department that need to be immediately addressed. The City Auditor's office also concluded that the IT Department should also reconsider the extent of IT functionality currently granted to user departments – in order to help with the current project backlog etc. Although departmental functionality may be increased, all IT functionality should remain under the control of the IT Department.

Overall Conclusion

The City Auditor's Office concluded that the IT Department consistently provides IT-related services that are required for day-to-day City operations. For example, IT provides and manages services such as network access, telephone and desktop support and addresses work orders requested by City employees. IT's summary of the various types of services being provided is presented in Exhibit I of this report.

The IT Department is also ultimately responsible for overall IT project management. While IT management may believe that high turnover, compensation discrepancies and being overworked has led to the inability to complete projects on time, the City Auditor's Office was not able to support this claim. Staffing and funding level comparisons to other Texas cities did not indicate that the City's current staffing and funding is significantly lower than other municipalities. While it is possible that slightly lower compensation offered to some positions has resulted in turnover, the City Auditor's Office was not able to determine whether this turnover has resulted in service backlog or an inability to deliver projects on time. As noted in the scope limitation section of this report, the lack of reliable time tracking data resulted in the City Auditor's Office being unable to make specific conclusions regarding resources and staffing levels. However, in spite of the audit scope limitation, the City Auditor's Office was able to identify various governance and process improvements that could help IT management reduce the backlog of projects and increase productivity.

Audit recommendations that should help strengthen the underlying foundation of the IT Department are included in the "Detailed Audit Findings" section of this report. A strong IT foundation includes an effective project prioritization process, the ability to adequately assess employee skills and capacity of the IT Department, and the ability to attract, retain and develop quality employees and leadership.

Detailed Audit Findings

1. IT does not track detailed employee skill sets within its recently implemented decision support tool.

COBIT sets forth governance standards for information technology and is accepted worldwide. COBIT principle 1 states that IT resources should be utilized to meet stakeholder needs by resource optimization, risk optimization and benefits realization. One of the COBIT-listed goals to meeting benefits realization and resource optimization is operational and staff productivity.

Prior to March 2012, the IT Department had not tracked its employee time utilization and available skill sets, resulting in an inability to determine IT's capacity to take on additional projects. The IT Department is currently in the process of implementing Innotas, a decision-support tool that includes time and staff capacity assessments for project management. The software is intended to provide management with information on how staff time is currently spent and determine available capacity for future projects. For example, the software will calculate the number of Network Administrator hours available for a particular project given the total number of network administrators and previous commitments to other projects. The current tracking categories for the new system were designed by IT management. Management selected the primary job title to represent the skill sets the department currently possesses. However, the City Auditor's Office noted that job titles consist of multiple job responsibilities which are not separately tracked. For example, the position of Network Administrator consists of the job functions of network administration (installation, maintenance, and configuration), security administration and telephone administration. Currently, these functions are all tracked as "Network Administration", which could result in inaccurate staffing analysis and resource utilization.

Another example is the job title of Systems Engineer. The City has five filled Systems Engineer positions that are responsible for both evaluating client needs for future systems and system administration duties for existing systems. Since these job responsibilities are varied, tracking them under one category does not provide sufficient detail on how System Engineer time was actually used. This may result in the inability to accurately project available system engineer resources for future projects.

The lack of detailed time tracking data and a decision support tool to aid in identifying capacity by skill set, resulted in the IT Department over committing resources in the past. As noted by user departments, this led to delays in projects or projects not being completed at all. Technology projects require multiple skill sets. In order to forecast capacity, management must utilize a system that can track multiple, detailed skill sets of each employee. Based on discussions with an Innotas representative and a detailed demonstration of the software, it appears that the installed decision support tool is capable of associating multiple skill sets to resources (employees) assigned in the system.

Recommendation:

The Chief Information Officer should consider segmenting the time and skill tracking in the new Innotas system to include multiple skills possessed by staff.

Management's Response:

Do Not Concur.

The City of Arlington's Information Technology (IT) process is based on industry standards and best practice, Innotas' vendor recommendations and IT management experience. Except for very large IT organizations where an individual would utilize a single skill set, this is rarely a standard practice. Standard practice by organizations our size is to project availability by resource rather than by skill group, segmented by type of work and scheduled accordingly.

Currently, resource capacity and capacity programming in Innotas is tracked by an individual resource role, possessing multiple skills. At Arlington IT, our staff utilizes multiple skills and manages multiple responsibilities. With this being the case, the resource segment we schedule is the individual, allocating their time by 4 types of work, i.e., Project, Maintenance, Break-fix and Administrative. We assign skills to a workgroup, segment by type of work and schedule by individual resource. Scheduling by individual resource allows greater flexibility when developing a project plan. In circumstances where specialized skills are needed for a specific project, we manage scheduling and tracking at the time of project assignment.

Audit Comment:

The City Auditor's Office discussed the Innotas software benefits with one of the vendor's product specialists and noted that the system can be used to track detailed skill sets. The product specialist provided a demonstration that confirmed the ease of use and benefits that can be realized during project planning by tracking individual skill sets. During audit follow-up, the City Auditor's Office will verify that the IT Department is utilizing Innotas efficiently to identify capacity and assign resources to projects.

Recommendation:

The Chief Information Officer should continue efforts to utilize decision support tools. At a minimum, these tools should aid in assigning IT staff; tracking time and skill sets allocated to projects; and ensuring that assigned projects are completed within the required timeframe established by legislation and/or as communicated by the IT Department.

Management's Response:

Concur. The City acquired the Innotas Project Management Office tool in FY2013. The department will continue with this process as recommended.

*Target Date: Completed and ongoing
Responsibility: Chief Information Officer*

2. The current structure/function of ITEC is ineffective.

The purpose for executive committees is to provide executive leadership by ensuring that the business needs and priorities of the enterprise are identified and satisfied. In reference to IT, the executive committee should determine the prioritization of IT resources - in line with business needs.

ITEC is unable to effectively serve in the capacity for which it was created. A Gartner Consulting Study dated September 2, 1999 recommended that the City of Arlington establish an IS Executive Council to approve IT strategy and direction; provide technology leadership and a forum for discussing governance-related issues; prioritize projects and set project portfolio; etc. The Gartner Study recommended a maximum of seven (7) department directors that were to be rotated.

ITEC currently consists of 17 department heads/division managers, and is charged with approving strategic information technology direction (including the creation and prioritization of a project portfolio) and approving City IT policies, procedures and standards based on proposals made by the Chief Information Officer. ITEC does not have the authority to make decisions regarding the rationing of IT resources. Also, there is no established process to help rectify instances where approved projects exceed available IT resources. According to IT management, ITEC has never actually prioritized projects, but rather approved projects and obtained status updates on projects in progress.

In 2011, ITEC approved IT projects based on a governance model presented by the CIO at that time. In March 2012, IT reported a total of 116 projects, 43 of which were in progress. Per IT, the 116 projects represented six years' worth of projects – provided no other projects were added. The City Auditor's Office was unable to determine how this estimate was determined since the IT Department did not begin tracking employee time (in order to determine IT operating capacity) until May 2012. Without knowing IT capacity, ITEC cannot gauge whether their decisions to approve projects are reasonable.

Due to the amount of time that has lapsed and personnel changes since the Gartner Consulting Study, the City Auditor's Office was unable to determine why ITEC was created with more members than recommended by Gartner. It should be noted that a large committee could result in each member voting for his/her own project if they see that other projects are constantly delayed, etc. Also, projects are approved and prioritized that cannot be reasonably completed with available resources. As a result, the City's business needs are not met.

Recommendation:

The City Manager should restructure ITEC by reducing the number of members to no more than seven (7) department heads that are to be rotated, as recommended in the 1999 Gartner Study. Consideration should be taken to limit the appointment to one department head from each service team to serve as the service team's representative.

Management's Response:

Concur. A new governance structure was formally implemented in December, 2013 designating the City Manager's Office (CMO), comprised of the City Manager and 3 Deputy City Managers, as the IT governance committee.

Under the new structure, the CMO first reviews all project requests at the initial project concept stage, utilizing high level information from the IT Business Analysts. If the CMO agrees the concept meets the City's business objectives, funding availability and overall priority, IT then proceeds to develop a full project request. The project request is then returned to the CMO for further assessment, funding assignments, project impact and priority on IT and project direction.

The new governance process aligns individual department requests with City priorities and insures appropriate IT resource availability.

Target Date: Completed and On-going

Responsibility: Deputy City Manager – Strategic Support

Recommendation:

The City Manager should require that the restructured ITEC resume its intended function by identifying and prioritizing projects that are the most crucial to the City. ITEC should then discuss available human and financial resources that are available to complete those critical projects with the CIO, designated Deputy City Manager and/or entire City Manager's team. Any necessary re-prioritization should be made upon analyzing projects, associated risks and available resources.

Management's Response:

Concur. The process of the City Manager's Office performing the role of the governance body streamlines the governance process to be much more effective.

Target Date: Completed and On-going

Responsibility: Deputy City Manager – Strategic Support

3. The current project prioritization process does not focus on meeting the City's business needs.

The purpose for prioritization is to help ensure that issues are being addressed in the order of importance, urgency, etc. Evaluating information technology projects helps determine their priority and value towards meeting the City's business needs.

The Information Technology Executive Committee (ITEC) is currently charged with prioritizing and approving all City of Arlington projects that involve technology. In 2011, the IT Department developed an Information Technology Governance document which addressed project classification and criteria, as well as factors that ITEC was to consider when prioritizing projects (e.g., statutory compliance, citizen service improvements, cost savings, etc.).

In April/May 2012, the IT Department developed a prioritized project list based on discussions with individual departments. Minutes from a May 2012 ITEC meeting indicated that the CIO had vetted projects with Directors (over a two to three-week span), to help determine IT's highest priorities. An emailed list was then to be forwarded to Directors to show which of these items IT would be able to handle at the time. The minutes further indicated that if a Director had a project that needed to be at a higher priority and could supplement with funding or staffing, then items could be shifted up or down.

IT staffing is a critical component to project implementation. However, for better organizational performance results, project prioritization should initially be based on the City's business priority. When the volume of projects undertaken is based solely on what the IT Department is able to deliver, projects which may provide benefit to the City may not be implemented.

Currently, a substantial project backlog exists, as noted in Finding #2 of this report. IT staff (management and non-management) indicated that the IT Department is currently functioning in a reactionary mode (e.g., "which fire do we put out first") versus one of strategy. Also, the CIO informed the City Auditor's Office that due to IT workload, IT was not considering current project requests, for a temporary time period. The IT Department did state that Fast Path Projects (defined, by IT, as projects having expenditures at \$50,000 or less for equipment or professional services or is under 80 hours in estimated work effort) are implemented as "filler" projects during lag time between the implementation of larger projects.

The City Auditor's Office identified the following possible drawbacks associated with the lack of an effective project prioritization process:

- The order in which projects are prioritized may not properly align with the City's business needs.
- Prioritizing projects without discussion among City service team representatives (in a group setting) could result in delayed efficiencies, additional costs, inadequate oversight of projects, and/or user department frustration or distrust.
- The potential for less-priority projects being considered priority is increased, thus resulting in an increased number of "on the burner" versus completed projects.
- Available grant funds could be forfeited if projects are not implemented or are delayed beyond the grant deadline.

Recommendation:

The Chief Information Officer, in conjunction with the City Manager's Office, should create and formalize a project prioritization policy that is aligned with the City's needs. The project prioritization policy should include factors such as business strategy, legal/regulatory/security, business risk, return on investment (increased productivity; decreased costs; increased revenue; disaster avoidance, etc.), and should address action to be taken when the prioritized list is approaching IT capacity.

Management's Response:

Concur. This action has been completed with the change in the IT governance role becoming a function of the City Manager's Office.

Target Date: Completed and On-going
Responsibility: Deputy City Manager – Strategic Support

Recommendation:

The City Manager should require that a manageably-sized Information Technology Executive Committee re-prioritize projects based on a formalized project prioritization policy that emphasizes significant business risk. If IT capacity is adequate, the Chief Information Officer should be required to implement the projects via a structured project management process. Alternatively, if IT capacity is not adequate, the City Manager should request additional funding for contracted services to implement the identified projects within a specified timeframe and within the allotted funding.

Management's Response:

Concur. With the governance process residing within the City Manager's office, project decisions regarding IT capacity, resources, funding and scheduling are now incorporated into the full project decision process. Project scheduling aligned with resourcing would flow through the Project Management Office and information regarding project status would be reported to CMO and ITEC members.

Target Date: Completed and On-going
Responsibility: Deputy City Manager – Strategic Support

4. The IT Department did not adequately account for additional funds provided to help remedy IT's project backlog.

When funds have been committed to expenditure for specific purpose, it is good business practice to establish controls that help ensure funds are spent for the intended purpose. Generally accepted information technology governance principles include meeting stakeholder needs as a primary guideline for technology investments. Meeting user needs entails IT executive management promoting technology that delivers benefits, completing projects that are on time and within budgets and meeting organizational expectations and accepted quality standards.

For the last two fiscal years (FY2012 and FY2013), the IT Department was provided funding to help alleviate the IT project backlog.

- On April 24, 2012, the FY2012 Operating Budget was amended to provide \$250K to the IT Department. The budget amendment was made as a result of IT's midyear request for one-time funding. The CIO indicated that the \$250K was based on what management believed they could reasonably request successfully and what they believed they would be able to spend between February and September 2012. The CIO stated that the department's need was greater than what they received. Per City Ordinance 12-016, the \$250K was for professional services to address a backlog of special projects. IT management indicated that the request was for staff augmentation so that the department could have a greater impact on IT workload and pending requested projects as prioritized by City leadership and ITEC.

The IT Department could not provide the City Auditor's Office with a schedule of anticipated accomplishments resulting from this additional funding. The IT Department maintained spreadsheets to track employee time spent on IT projects, but the City Auditor's Office could not determine if progress on assigned projects met management expectations. According to department records, approximately 1,500 hours were spent on 25 projects during FY2012. Review of Lawson financial records indicated that \$105,722 was spent on contract project managers and business analysts through September 30, 2012. Management indicated that funding was not exhausted prior to the end of FY2012 due to the lapse in time between the initial request in February and funding approval in late April. As a result, \$144,278 (\$250,000 - \$105,722) was not expended during FY2012 for project management. Management indicated that funds were encumbered at the end of FY2012 and expended early in FY2013. However, the City Auditor's Office noted that the encumbered funds (\$84,599) appeared to be spent mainly on clerks (asset management, etc.) and not project managers or business analysts.

The following table summarizes the projects, type of skill obtained and the number of hours worked through September 30, 2012:

Project Name	Type of Skill	Hours
CJIS Advanced Authentication	Project Manager	132
Automated Fingerprint Identification	Project Manager	22
Email Archive Upgrade	Project Manager	63
Innotas Implementation	Project Manager	2
Mobile Device Access Mgt	Project Manager	403
Police Mobile Command Upgrade	Project Manager	29
SAN Storage Migration	Project Manager	102
SCADA Network Upgrade	Project Manager	13
Server Virtualization	Project Manager	52
SSL VPN Upgrade	Project Manager	102
Tiburon CAD Replacement	Project Manager	175
Tiburon CAD Replacement	Business Analyst	7
Traffic Signal Switch Replacement	Business Analyst	5
Fuel System Upgrade	Project Manager	23
Wireless Broadband Expansion	Business Analyst	17
Wireless for Police Recruits	Project Manager	21
Active Directory upgrade to Windows 08	Business Analyst	4
Alteris Upgrade	Business Analyst	8
Body Worn Cameras	Business Analyst	55
Crash Reporting	Business Analyst	108
Database Collection	Business Analyst	60

Court Video Recording	Business Analyst	75
Court Video Display	Business Analyst	101
Fuel Management System	Business Analyst	3
Court Video Signage	Business Analyst	4
	TOTAL:	1,586

- The IT Department submitted a \$300K Budget Issue during the FY2013 budget process. Within that Budget Issue, IT noted a need to supplement resources, specifically for IT projects (18 project requests listed) and technology security. IT was granted the \$300K, of which \$50K was for security resources. The IT Department estimated that 6,500 hours would be associated with the 18 IT projects. However, IT's estimate was not based on actual capacity assessments or skill assessments needed to complete the projects. As of May 2013, three of the 18 projects were on hold; seven projects were not in the project tracking documentation; five projects were in progress; one project had not yet started; and the status of the remaining two projects could not be determined based on the project description within the budget document.

The IT Department provided the City Auditor's Office with a schedule indicating that \$266,701 of the \$300,000 had been spent in FY2013 on nine contract personnel. IT also provided the City Auditor's Office with a spreadsheet detailing project time tracking for the department for FY2013. Time was recorded on the spreadsheet for only six of the nine contractors. The total number of hours recorded were 2,668, which represented a total cost of \$168,883. The City Auditor's Office was unable to determine whether the additional \$97,818 (\$266,701 - \$168,883) in temporary staffing was used to help decrease IT's project backlog as time for the three employees was not detailed in the project time tracking software. In addition, it appears that some projects worked by the six contractors were also not recorded in the time tracking system. As of August 21, 2013, none of the \$50K designated for security had been expensed directly for security, although management indicated that some of the projects included security components.

Recommendation:

The Chief Information Officer should ensure that there is full accountability (e.g., accurate and complete tracking of how the funds were utilized) and transparency related to funds that are requested and provided for specific IT purposes.

Management's Response:

Concur. The Chief Information Officer has provided a full accounting for all funding and will continue to support this process in the future. Accountability and transparency continue to be a core value of the Information Technology Department and is supported by the Chief Information Officer, Managers, Supervisors and staff.

As communicated during the audit process, the timing and availability of the special 2012 funding noted in the audit, compared with the ability to source contractors and align with

projects, provided timing issues with alignment in fiscal years. Appropriate documentation of how these funds were expended has been provided.

*Target Date: Completed and On-going
Responsibility: Chief Information Officer*

Recommendation:

The Deputy City Manager over Information Technology should ensure all future additional funding requests are accompanied by verifiable and accurate skill assessments required to complete the projects.

Management's Response:

Concur. The Deputy City Manager over Information Technology will continue to ensure additional funding requests include all appropriate information to accurately represent project requests.

During the governance process, the Business Analyst gathers requirements based on information from the department Subject Matter Experts, IT Technologists and vendors to determine project estimates. This information will include IT and department skills analysis and will be communicated as part of this additional funding requests process.

*Target Date: Completed and On-going
Responsibility: Deputy City Manager – Strategic Support; Chief Information Officer*

5. The IT Department has not effectively utilized business analysis in identifying, prioritizing, initiating and implementing information technology projects.

Business analysis is a research discipline of identifying business needs and determining solutions to business problems. Solutions often include a systems development component, but may also consist of process improvement, organizational change or strategic planning and policy development. According to the Project Management Institute (a not-for-profit professional organization which sponsors project management credentials and certifications), when a project manager and business analyst are both present on a project team, the project manager can focus their efforts on project schedule, cost, and resource management. The business analyst can spotlight their time and energy on ensuring accurate requirements management – all critical components of a successful project.

As part of a 2008 IT Department reorganization, the previous Chief Information Officer added business analysis responsibilities to various job positions. In addition, the Senior Programmer position was reclassified to Application Specialist, which included some additional business analysis responsibilities.

In May 2012, IT executive management staff embarked on another departmental reorganization, identifying lack of business analysis as the primary cause for a large number of backlogged projects. This latest reorganization was spearheaded by the current CIO, who was hired in September 2011. In FY2013, the CIO restructured the IT Department to create three Business Analyst positions to integrate with City departments to assist with IT related projects and other IT issues. The primary

intent was to improve project requirements, resulting in smoother project implementations and reductions in the amount of unforeseen expenses that can come up during the project implementation process.

The City Auditor's Office noted that business analysis responsibilities were included in the job descriptions for various IT Department staff positions. For example, the job description for the Application Specialist II position includes the following as essential job functions:

- Ability to provide analytical and technical assistance relative to the identification, development, and implementation of application software solutions for customer departmental business needs
- Ability to fully analyze and document existing business processes; identify and document proposed business process improvements

According to management, staff members occupying these positions either lacked the skills, resources or time to conduct business analysis as needed. Management further stated that staffing shortages and the large backlog of projects prevented the department from performing business analysis, hence the request to hire Business Analysts in FY2013. The CIO also stated that IT employees were assigned to specific applications as their full time responsibilities, thus preventing employees with project management and business analysis skills from providing assistance elsewhere.

Based on review of the expected use of business analysis in the future, the City Auditor's Office noted that the IT Department does not intend to use subject matter experts within non-IT departments to replace the extent of business analysis required from within the IT Department. However, several City departments such as Police, Water and Public Works have their own IT staff that perform day-to-day departmental desktop duties, work with departmental applications and troubleshoot functions. These employees are subject matter experts of their departmental operations (e.g., have technical backgrounds and may possess project management certifications) and conduct business analysis during the project request process. These employees also participate as part of the IT Department's project management team during the planning and execution of technology projects.

In addition to these three departments, many, if not most other departments, have operations analysts that are already capable of flowcharting processes and identifying necessary improvements and technology solutions. The City Auditor's Office agrees with the concept of business analysis but does not feel that such analysis can only be performed by the IT Department. Having Business Analysts from the IT Department conduct analysis within departments that already have analysts with the ability to document departmental processes seems inefficient and could result in further project delays.

IT Business Analysts are hired to conduct cost/benefit analysis and to conclude as to whether the project is worth the investment. The CIO stated that the Business Analyst position was created based on industry standards, past experience with other governmental entities and consultant/advisory experience. In order to conduct such analysis, newly-hired analysts must learn the intricacies of the City's operating environment and obtain an understanding of each department's

specific processes, procedures and background. The City Auditor's Office noted that this process often entails obtaining assistance from longer tenured IT employees who have already obtained an understanding of department operations. This appears to be ineffective, as it duplicates IT resources needed to complete the business analysis function, and thus, may further delay project implementation.

During discussions with the City Auditor's Office, the Chief Information Officer indicated that the IT Department did not have additional resources to take on more projects. Subsequently, this statement was clarified to indicate that the lack of resources was for a temporary time period, while the decision support tool was being implemented. Business Analysts were hired to work with departments to identify necessary process improvements and determine whether new technology solutions were warranted. This appears to be counterproductive as capacity does not appear to exist to take on additional projects.

The business analysis concept is considered a best practice. However, the concept seems to be more effective in an environment that has fewer challenges than those currently facing the City of Arlington. Given the substantial project backlog and reputation given to the IT Department because of project non-delivery, the City Auditor's Office is of the opinion that current City projects could be better addressed if management leverages business analysis skills currently possessed by IT Project Managers and non-IT staff for projects within their respective departments.

The City Auditor's Office recognizes that IT management does not have the responsibility or authority to ensure that non-IT staff conducts business analysis in accordance with IT guidelines. IT management has indicated that departments have purchased or installed software/systems in the past without conducting adequate business analysis. The result is an additional burden on IT to properly maintain and support systems on an on-going basis that should not have been implemented. In surveying user departments, the City Auditor's Office found that many departments had decided upon software solutions without IT involvement. The following table summarizes responses received to the inquiry as to when the IT Department became involved in departments' software projects:

INTERVAL AT WHICH IT DEPARTMENT BECAME INVOLVED		
	Responses	Pct.
When dept began discussing inadequacies	28	28.0%
After dept concluded new software needed	22	22.0%
After dept wrote specs for new software	8	8.0%
After specs written and vendor selected	9	9.0%
When it was time to implement the software	16	16.0%
When had problem w/ software dept installed	3	3.0%
When had problem w/ software vendor installed	1	1.0%
IT Dept not involved	10	10.0%
Pre-initiated by IT staff	3	3.0%
	100	100.0%

Source: City Auditor Office Survey of Departments

The above chart indicates that departments did not obtain or seek IT involvement in the early decision making stages for a large percentage of projects. The City Auditor's Office recognizes that this increases the risk that the IT Department is asked to implement, maintain and support systems that may have resulted from inadequate business analysis. However, it appears possible that the IT Department can work with departments to ensure that appropriate business analysis is performed – regardless of whether that analysis is performed by the IT Department or by departmental subject matter experts.

Recommendation:

The Chief Information Officer should maximize the use of employees within other departments that have the skills to perform and report results of business analysis to IT's project management and business analysis teams for further consideration.

Management's Response:

Concur. Many City departments currently utilize employees within their department to perform IT functions including: Application Administration, System Administration, Data Base Administration, Desktop Support and a variety of other IT activities which otherwise may need to be performed by IT staff. These non-IT staffs receive direction from their department leadership without direction from IT. In some cases, workload is relieved from IT and in other cases; IT must provide support to these individuals, on demand, when work exceeds their skills and abilities.

IT does not have the authority to direct or manage the activities of these individuals. This issue was also identified and documented in the CliftonLarsenAllen (CLA) Security Assessment. Where possible, IT utilizes these individuals along with department subject matter experts to augment the business analysis process.

The finding does not adequately represent the functional role or skills required of an IT Business Analyst (BA). Specific training and skills are developed for business analysis methodology, reviewing current process, modeling for potential process changes, the probability of success and dissecting issues to the root cause prior to selecting a solution. BA's play a key role in managing communication between departments and IT, verifying and setting expectations, coordinating reuse of existing solutions between departments and verifying accurate and complete information prior to start of a project. The use of BA's as a specifically skilled resource in the success of IT departments is evident in city and county IT departments all across the DFW region.

Business analysis performed by non-IT department personnel may contain bias towards a single, predetermined department technology solution often lacking an understanding of current enterprise standards, the skills IT currently contains to support potential solutions and the best practice of reviewing People, Process then Technology. Their analysis skills relate to understanding the particular technology and do not extend into analysis of the business need, business process, change management within the department users or alignment with organizational or department goals. This practice has impacted performance levels for IT for years causing missed expectations for meeting the customer's needs.

IT is committed to provide quality products and services in a timely and cost effective manner. IT will continue to utilize the skills possessed by non-IT department staff and skills of IT technologists to assure the analysis process is completed appropriately for each business request.

Target Date: Completed and On-going

Responsibility: Chief Information Officer and City Department leadership

Recommendation:

After a trial period, the Chief Information Officer should assess the success of business analysis across the organization and determine if the number (not the function) of IT Business Analyst positions is warranted and supported by customer need and the City's overall strategic plan.

Management's Response:

Concur. The Chief Information Officer has assessed and recommended as part of the budget process in FY13 and FY14. The CIO will continue to review and assess all positions to insure the appropriate level of resources to meet the City's needs.

Target Date: On-going

Responsibility: Chief Information Officer

Recommendation:

The City Manager should require that all IT-related purchases should be approved by the IT Department after verification that adequate business analysis has been conducted.

Management's Response:

Concur. The City Manager concurs and will require IT related purchases be verified and approved by the Information Technology Department.

Target Date: Completed and On-going

Responsibility: Deputy City Manager – Strategic Support

6. Information Technology Department staff members have not been able to complete duties outlined in job descriptions.

Control Objectives for Information and Related Technology (COBIT) states the need for an approach to governance that emphasizes people, skill and competencies as means of achieving objectives of the enterprise. The guidelines identify operational staff productivity as part of the internal structure needed to achieve enterprise objectives, and skilled and motivated people as part of the learning and growth component to maximize results.

The recent IT security study conducted by CLA identified sub standard security and operational areas. The City Auditor's Office noted that the department's current staff includes funded positions responsible for performing various duties identified as deficient by the consultant.

Multiple reorganizations, the current reactive nature of the IT Department and the employee skill sets (per IT management) have led to the deficiencies identified by CLA. For some positions, IT management appears to have shifted the focus away from the job responsibilities listed in the job description. For example, the City Auditor's Office noted that management shifted the focus of the current Security Administrator position to other responsibilities (e.g., supervision of Help Desk and business analysis staff) within the department, leaving the current staff member in the position unable to fulfill the outlined job responsibilities related to security.

Although the above example relates to security responsibilities, the City Auditor's Office also noted other areas where job description duties were not performed. As noted in Finding 5, job descriptions for several positions, including the Application Specialist II position, included business analysis responsibilities that are not being performed by the incumbent. Although management has indicated that a lack of resources has resulted in those duties not being performed, a risk exists that position reclassifications and salary increases may have been provided to employees based on the expectation that they would perform those duties.

In addition to management shifting the focus of some positions, the City Auditor's Office noted several instances of key IT personnel, including management and supervisory staff, lacking certifications and college degrees that are listed as a requirement in the current position descriptions. It is expected that staff background, including certifications and education, would provide staff guidance in following accepted quality standards and competency standards associated with information technology. The City Auditor's Office recognizes that the lack of required degrees and certifications does not mean an employee is incapable of performing their assigned duties. However, it is possible that the lack of required education and certifications could lead to inefficiency and ineffectiveness.

The success of a business unit depends on how well the unit is managed. Successful managers establish reasonable goals, provide guidance to employees and hold employees accountable. The IT Department has identified the lack of resources as a contributing factor for work and projects not being completed. For example, management noted that adequate funding was not received to address the security issues identified by CLA. As noted in the Methodology section of this report, the City Auditor's Office was not able to determine the adequacy of funding due to the absence of reliable time tracking data. As the use of the new decision support tool matures, City management should be better able to determine resource needs and appropriate funding levels.

Recommendation:

The Deputy City Manager over Information Technology should require that job descriptions be updated to more accurately reflect the work that is required, and then initiate a process to ensure that each employee possesses the qualifications, knowledge, skills and abilities listed in individual job descriptions to effectively fulfill position responsibilities.

Management's Response:

Concur. The Deputy City Manager over Support Services will work with the Chief Information officer and Director of Human Resources to ensure job descriptions are reviewed on a timely basis.

Target Date: On-going
Responsibility: Deputy City Manager – Strategic Support

Recommendation:

The Deputy City Manager over Information Technology should initiate a process to set forth goals, objectives and leadership expectations to IT departmental managers and supervisors based on organizational goals and to mentor and hold subordinates accountable for expected performance levels.

Management's Response:

Concur. The Deputy City Manager over Information Technology concurs and will continue to set expectations of IT Department leadership to meet organizational goals.

Target Date: Completed and On-going
Responsibility: Deputy City Manager – Strategic Support

7. Budgetary constraints have not allowed management to provide Information Technology employees with adequate training opportunities.

A program of continual information technology training is crucial to the success of any IT team. Adequate training is necessary to help ensure a workforce that embraces emerging technologies, as well as how they serve a larger business purpose to ensure that technology is being used to the company's best strategic advantage. Such training adds value to the City's use of information technology.

During this audit, the City Auditor's Office requested a summary of employee training. The IT Department provided training summaries after requesting IT employees to individually submit training information. When training records are not maintained in a centralized location, management may not be fully aware of staff training needs. Training records provided to the City Auditor's Office indicated the following deficiencies.

- Six employees had not received professional IT training since FY2010. These six employees held positions that related to customer support and system engineering.
- Four employees had not received professional IT training since FY2011. These four employees held positions that related to customer support, systems engineering, application specialty and network design.
- The most recent professional IT training received by four (4) employees was in FY2012, with the latest date being November 2011. These four employees held positions that related to web development, network administration, and software management.

Discussions with IT staff (at all levels and in each IT Division) resulted in mixed reviews concerning training. On one hand, the City Auditor's Office was informed that employee training requests are always approved by IT supervisors. On the other hand, IT staff indicated that there was not enough money budgeted for training; and if there was adequate funding, limited IT staffing would make it difficult to have employees out of the office. Some IT employees perceived training to be

inadequate because training money is transferred to fund something other than employee training. Comments also referenced that the training provided did not apply to the employees' work or that funding was adequate but did not help when serving as a back-up to another IT section/division.

A three-year comparison of budget-to-actual expenditures for training only and for the department as whole, is noted in the following charts. As noted, the IT Department expended less than what was budgeted for training during FY2011 and FY2012. However, the IT Department exceeded its FY2011 and FY2012 budgets by more than the unused training dollars. IT management indicated that due to the vacancy savings that IT was required to meet for budgetary purposes, funds initially budgeted for training were used to offset that budgetary requirement. The vacancy savings requirement for the IT Department during FY2011, FY2012 and FY2013 was \$116,553, \$126,736 and \$126,736, respectively.

Training Only:

IT Division	FY2011			FY2012			FY2013			Three-Year Variance
	Budget	Actual	Variance	Budget	Actual	Variance	Budget	Actual	Variance	
IT Administration	\$6,666	\$3,440	(\$3,226)	\$6,666	\$2,133	(\$4,533)	\$6,666	\$3,579	(\$3,087)	(\$10,846)
Project Management	7,551	1,014	(6,537)	7,551	598	(6,953)	18,551	5,851	(12,700)	(26,190)
Infrastructure	5,214	2,464	(2,750)	3,114	2,450	(664)	2,614	1,393	(1,221)	(4,635)
GIS	3,507	1,525	(1,982)	3,507	3,475	(32)	-	-	-	(2,014)
Information Security	9,582	4,885	(4,697)	11,682	603	(11,079)	-	-	-	(15,776)
Business Development	12,760	12,602	(158)	7,500	7,988	488	4,000	-	(4,000)	(3,670)
Software Services	31,000	34,656	3,656	31,000	25,118	(5,882)	39,189	29,718	(9,471)	(11,697)
Challenge Grant	6,000	4,975	(1,025)	-	-	-	-	-	-	(1,025)
TOTALS:	\$82,280	\$65,561	(\$16,719)	\$71,020	\$42,365	(\$28,655)	\$71,020	\$40,541	(\$30,479)	(\$75,853)
PERCENT USED:	79.68%			59.65%			57.08%			

Source: Lawson Financial System

IT Department, as a whole:

IT Division	FY2011			FY2012			FY2013			Three-Year Variance
	Budget	Actual	Variance	Budget	Actual	Variance	Budget	Actual	Variance	
IT Administration	\$590,067	\$592,265	\$2,198	\$988,733	\$943,074	(\$45,659)	\$587,405	\$584,691	(\$2,714)	(\$46,176)
Project Management	1,539,757	1,505,903	(33,854)	179,608	69,912	(109,696)	1,058,151	979,334	(78,817)	(222,367)
Infrastructure	663,861	763,368	99,507	1,069,796	1,139,233	69,437	265,816	251,274	(14,542)	154,401
GIS	210,930	202,390	(8,540)	218,743	227,135	8,392	-	-	-	(148)
Information Security	396,206	398,996	2,790	450,552	472,129	21,577	57,968	57,902	(66)	24,301
Business Development	428,449	445,681	17,232	690,902	758,951	68,049	320,017	254,497	(65,520)	19,760
Software Services	186,180	162,179	(24,001)	1,766,665	1,790,647	23,982	2,108,953	2,108,876	(77)	(95)
Challenge Grant	182,289	173,659	(8,630)	-	-	-	-	-	-	(8,630)
TOTALS:	\$4,197,739	\$4,244,441	\$46,702	\$5,364,999	\$5,401,080	\$36,081	\$4,398,310	\$4,236,574	(\$161,736)	(\$78,953)
PERCENT USED:	101.11%			100.67%			96.32%			

Source: Lawson Financial System

The City Auditor's Office noted that the following could occur if staff is not provided adequate training:

- Employees may not obtain skills that are necessary to satisfactorily perform their job. As a result, there could be a lack of job enrichment, unacceptable job performance, employee disgruntlement (which could lead to IT security risks), etc.
- Departmental reorganizations could take place without taking into account technical skills that have been obtained (or not obtained) by individual staff members.

Recommendation:

The Chief Information Officer should determine current staff training needs, based on each staff person's current skill set, job requirements, and prior training. Professional training should then be provided to staff, as available within the departmental budget.

Management's Response:

Concur. The Chief Information Officers will continue to review staff training needs and these will be addressed appropriately.

Target Date: On-going
Responsibility: Chief Information Officer

Recommendation:

The Chief Information Officer should develop a training policy that includes identification of training needs/requirements which will allow employees the opportunity to learn and/or enhance IT skills that are necessary to achieve the City's overall IT objectives.

Management's Response:

Concur. The Chief Information Officer will develop a training program to allow IT employees training opportunities which benefit the City's overall IT objectives.

Target Date: On-going
Responsibility: Chief Information Officer

Recommendation:

The Chief Information Office should maintain training records of IT employees in a centralized location and use that information to routinely assess the adequacy of training received by IT staff.

Management's Response:

Concur. The Chief Information Officer will ensure that the department will continue to track and record training progress of each employee.

Target Date: Completed and On-going
Responsibility: Chief Information Officer

8. Management has not established effective incident management (Help Desk) performance measures.

Performance measures should be designed so that IT management can effectively manage and evaluate the results of the City's IT investments.

The IT Department currently utilizes a number of reports which cover different aspects of IT work orders. However, the reports do not address metrics that are necessary to evaluate true IT performance. For example, a current report shows how many work orders were closed during a specific month. However, there is no report that shows how many work orders were in progress at the end of that month, or how many work orders were opened prior to that month but remain open.

Many of the incident management (Help Desk) reports being used were designed years ago and have not been reviewed to see what value they provide or if they provide an accurate view of the work requested or performed. IT staff indicated that the current workload has not allowed time to research and develop more effective metrics.

Without adequate performance measures, management may not be aware of unacceptable performance, which could result in management directing its focus in the wrong area and/or not identifying potential training needs or staff's inability to fix specific problems.

Recommendation:

The Chief Information Officer should require that performance metrics are updated to ensure that useful information is available to aid in the proper management of IT operations.

Management's Response:

Concur. The Chief Information Officer will ensure useful report information is available as part of the redevelopment of the Help Desk tool set to measure over all effective incident management.

As part of the IT FY2014 work plan, IT staff will be installing a fresh version of the Magic Helpdesk software and configuring the application as designed out of the box. This work will enable the CIO and manager responsible for IT Customer Support Services to better measure IT incidents and address any training needs.

Target Date: January 2015

Responsibility: Chief Information Officer

9. Management has not implemented audit recommendations across the organization.

Management is responsible for promptly and effectively implementing recommendations that result in more effective internal control systems, cost savings, operational improvements, better safeguarding of assets and/or compliance with laws and regulations. Although management has implemented prior audit recommendations, implementation was limited to the specific application being audited. Implementation was not applied across the organization.

Studies and audits conducted by outside consultants and the City Auditor's Office have found repeated deficiencies in the City's information technology services.

Management did not determine whether the recommendations were applicable to other IT applications and/or across the organization when considering implementation. As a result, the City unnecessarily assumes operational risks which could result in unauthorized transactions, loss of data, etc.

Recommendation:

The Chief Information Officer should ensure that audit-specific recommendations are applied across the organization when considering implementation.

Management's Response:

Concur. The Chief Information Officer will continue to work with the City Manager's Office and department directors to ensure audit specific recommendations are appropriately applied throughout the enterprise IT systems.

Target Date: On-going
Responsibility: Chief Information Officer

Exhibit I

IT Statistics
as of September 2013
(unaudited)

IT is responsible for the following services used on the network:

- 2,100 telephones using 3,000 phone numbers
- The City's public Wi-Fi service, COAOnline
- 2,900 City desktop, laptops and tablet computers
- An email system with 3,600 accounts
- 377 surveillance cameras
- The City's Internet sites

Other services that run on the network include:

- The City's traffic management system, including control of the City's traffic signals and traffic management cameras
- Video conferencing
- Water's equipment control system, SCADA

Equipment used to provide this service includes:

- 347 servers
- 570 network switches
- Routers, firewalls, spam filters and other equipment

Other responsibilities required to support this operation include:

- Procurement and license management for over 300 software packages
- Support for 60 of the City applications. The major applications supported include:
 - The City's Geographical Information System (GIS)
 - Lawson, the City's financial system
 - InCode, the City's Court management system
 - AMANDA, a work management system used by several departments
 - Kronos, the City's employee time management system
- Operation of the City's Internet servers and application development when needed
- Database administration and report development
- Data backup
- Provide support for employees through a Help Desk, which processed 17,500 requests in Fiscal year 2013.
- Support for the City's computers