



Internal Audit Report

Information Technology Operational Assessment



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Auditor's Conclusion

August 28, 2023

Internal Audit has completed the Information Technology Operational Assessment. We conducted this engagement as part of our 2022 Annual Audit Plan.

The audit objectives were to:

- Evaluate the effectiveness of the current Information Technology (IT) organizational structure in the context of executing its mission.
- Identify additional risk areas for future audit engagements.

To this end, Internal Audit:

- Reviewed policies,
- Interviewed IT management, IT staff members, and City staff,
- Analyzed Strengths, Weaknesses, Opportunities, and Threats, and
- Relied on and analyzed results from surveys conducted by Info-Tech.

Based on the results of our engagement procedures, we conclude that the IT Department requires a comprehensive action plan to address critical areas such as organizational structure, communication, project management, and overall support of the City. We have detailed our issues and recommendations in this report's Finding & Recommendation section.

We want to thank the City staff members who participated in the interviews and surveys. We would also like to express our gratitude to the IT leadership and staff for their cooperation and support during the audit. Their commitment and help were instrumental in ensuring a smooth audit process.



Michelle Crawford, M.Acct., CIA, CFE, CRMA
City Auditor

Audit Profile

Audit Team

Michelle Crawford, M.Acct., CIA, CFE, CRMA – City Auditor

Laiba Saqib, MPAcc – Lead Auditor

Scope

The scope was limited to examining IT organizational structure, operations, and client feedback.

Background

The IT Department's operations are critical to City operations' success. From facilitating communication and collaboration, to managing crucial data, IT touches every department in the City. The IT Department is the backbone of City operations.

IT is composed of five divisions:

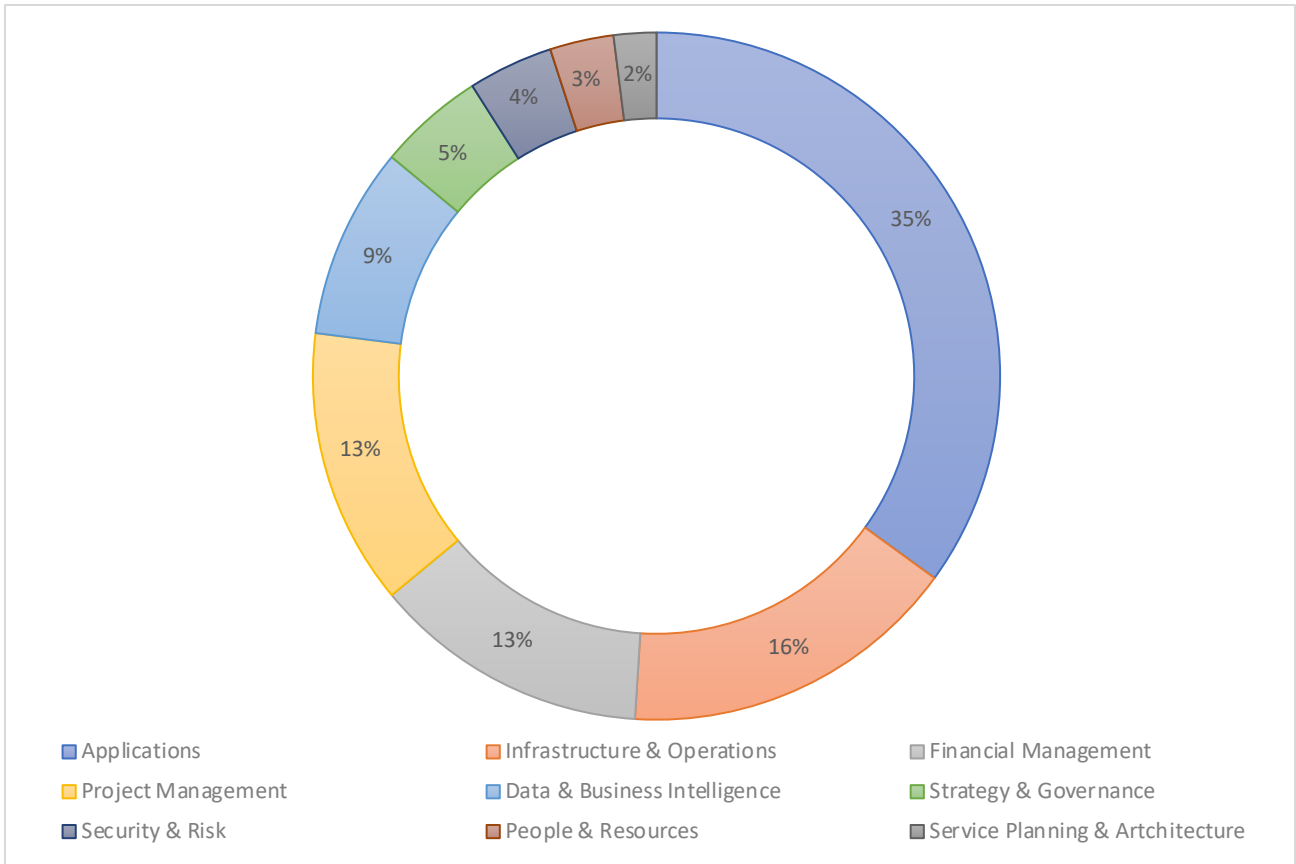
- Administration
- Software Solutions
- Technical Infrastructure
- Program Management Office
- Information Security Office

These divisions report to a division manager, who reports to the Chief Information Officer. Staffing is a combination of full-time staff, contractors, and contingent workers. The following is a budget & staffing overview of the IT Department. This information was obtained from the Info-Tech¹ surveys as of March 2023:

Total # of IT Employees	62
IT Managers/Leaders (that have direct reports)	15
# of Users Supported	3,700
Average Experience	19 Years
IT Budget	\$33,715,774

The following graphic depicts IT time allocation by function:

¹Info-Tech is an external third-party information technology research and advisory company engaged by the IT Department to conduct surveys throughout the City.



Following the conclusion of the surveys, IT engaged in Info-Tech’s consulting services to address the gaps discovered. IT’s collaborative efforts with Info-Tech’s consultant to address the issues identified and their ongoing work on a strategic plan demonstrate their dedication and proactive approach to enhancing IT services within the City.

Finding and Recommendation

The success of City operations relies heavily on the efficiency and effectiveness of the Information Technology (IT) Department. This audit aimed to assess the IT organizational structure, operations, and client feedback and identify areas for improvement. Our analysis identified concerns related to IT operations and indicated the need for improvements in several key areas.

City Employee Interviews²

Interviews conducted by Internal Audit with City employees revealed that employees perceive³ several areas as concerns, including responsiveness issues, communication, poor partnership/customer service, project management, prioritization challenges, and the need for department-specific support.

The most frequent and prominent issues observed by City employees include:

- An overall lack of responsiveness from IT.
- Communication breakdowns,
 - Including the need for more transparency and communication, especially within ServiceNow⁴.
 - The absence of a strong feedback loop and effective communication channels between IT and City departments further contributes to operational challenges as recognized by employees.
- Inadequate project management practices,
 - Including perceptions that project management may be a root cause for project delays and suboptimal outcomes, with data errors and issues with the citywide Workday⁵ implementation being at the forefront of examples.

Other observations included restricted control over permissions and strict access control, resulting in dependence on IT for fundamental tasks and fostering a perceived sense of dependency and bottlenecks in day-to-day operations.

City employees highlighted both positive and negative experiences and concerns. Some employees mentioned that IT is a hard-working group that suffers from a lack of staffing. However, overall, City employees perceive that IT cannot meet all of their needs.

² Interviews with City staff were conducted in February and March 2023.

³ The information presented is based on the perceptions and experiences of individuals rather than objective, verifiable facts. Perceptions may vary among different individuals, and the findings reflect the subjective viewpoints shared by employees during the interviews and surveys conducted.

⁴ ServiceNow is a cloud-based IT service management platform used by City staff to submit IT tickets, incidents, and service requests.

⁵ Workday is a cloud-based Enterprise Resource Planning (ERP) tool integrated in the City to manage Human Resource (HR) processes, including payroll, benefits, and employee data.

IT Employee Interviews⁶

Interviews conducted by Internal Audit with IT employees revealed areas of concern as perceived by internal IT staff, which include the presence of silos within the department, the lack of a clear vision and strategy, poor project management practices, unclear roles, and the absence of a prioritization system for projects. Internal Audit also observed concerns around the working environment among some IT teams.

The most prominent issues observed by IT employees included:

- Perceptions of management and leadership issues.
- Lack of a clear vision and strategy, which, according to IT staff,
 - Hinders resource allocation and decision-making,
 - Hinders IT's ability to achieve its mission, and
 - Contributes to overlap and duplication of efforts.
- Silos within the department, which:
 - Impedes effective communication and collaboration,
 - Leads to unclear roles and responsibilities, and
 - Leads to competing priorities.
- Inefficient and ineffective project management:
 - Employees perceived project management to be focused solely on faster project delivery, creating a gap between project and service alignment and sacrificing quality for speed.
- Inefficient use of software and overlap among existing software were believed to be sources of waste and frustration by end-users and IT employees alike.

Like City employees, IT employees also expressed mixed experiences and concerns. Some employees also noted that IT staff are always willing to try and learn new things and that communication within specific divisions is open and effective. Overall, the department faces challenges supporting internal IT staff and City departments.

The table below lays out the concerns of IT staff and City staff side-by-side:

⁶ Interviews with IT staff were conducted in August, September, and October 2022.

Concerns	City Staff Perceptions	IT Staff Perceptions
<i>Access & Control Issues</i>	✓	-
<i>Communication & Collaboration Issues</i>	✓	✓
<i>IT Responsiveness & Service Issues</i>	✓	-
<i>Leadership & Management Issues</i>	-	✓
<i>Process and Procedure Issues</i>	-	✓
<i>Project Management & Planning Issues</i>	✓	✓
<i>Resource Constraints & Allocation Issues</i>	✓	✓
<i>Technology-related Issues</i>	✓	✓

Info-Tech Survey Descriptions

In partnering with City IT and Internal Audit, Info-Tech conducted the following four surveys in March 2023:

- **CEO-CIO Alignment:** This survey assessed the alignment between the Chief Information Officer’s (CIO) perception of IT and the perceptions of the City leadership.
 - o Survey recipients: City Manager, Deputy City Managers, and the CIO
 - o Completion rate: 80%
- **CIO Business Vision:** This survey aimed to gather feedback from IT business clients, providing insights into their perception of IT services and their ability to meet their needs.
 - o Survey recipients: Supervisors in City departments
 - o Completion rate: 42%
- **IT Management & Governance:** This survey focused on assessing the effectiveness and importance of current IT processes from the perspective of IT management.
 - o Survey recipients: IT Department supervisors and managers
 - o Completion rate: 72%
- **IT Organization Design & Staffing:** This survey aimed to gather insights from IT employees regarding the organization’s design, staffing levels, governance, project management, and overall perceptions of IT operations.
 - o Survey recipients: Entire IT Department
 - o Completion rate: 72%

We included key graphics from the Info-Tech surveys in Appendix 1 of this report.

Info-Tech Surveys

The Info-Tech IT Satisfaction scorecard summary from the survey sent to City staff (CIO Business Vision) reflects the average satisfaction levels throughout the City. The results below indicate areas that require improvement:

- **IT Satisfaction:** Satisfaction with IT and its ability to support City needs is only 54%.
- **IT Value:** Satisfaction regarding the value provided by IT related to staffing and cost perception is 56%.
- **Understanding Needs:** Satisfaction regarding IT understanding departmental needs is 53%.
- **Effective Communication:** Satisfaction is at 49%.
- **Executing Requests:** Satisfaction with IT's ability to execute requests and meet needs is low at 51%.
- **Effective Training:** Satisfaction with IT training is low at 50%. Although citywide IT training is not provided, IT has an opportunity to evaluate how systems are rolled out and to advocate for training.

The survey results also highlighted the need for improvement in several priority areas:

- **Priority 1:** Service Desk – Satisfaction with the responsiveness and effectiveness of the service desk is only 51%. Per the CIO, the IT structure did not include a true service desk. IT recognized this gap and is piloting a contractor providing these services on-site as of June 2023.
- **Priority 2:** Network & Communication Infrastructure – Satisfaction with the reliability of communication systems and networks is 60%.
- **Priority 3:** Business Applications – Satisfaction with applications and functionality is 58%.

Overall, the surveys demonstrate consistently low ratings, emphasizing the importance of enhancing the partnership between IT and its clients.

Based on the analysis of the four surveys conducted by Info-Tech, the following are key takeaways, broken down by department using a heat map:

From the table below:

- Only 3 out of the 18 departments rated their overall satisfaction with IT as 70% or above,
- 2 out of the 18 departments surveyed reported that IT's capacity constraints restrict their operations by 70% or more, with most departments reporting mixed responses,
- Only 6 out of 18 departments are satisfied with IT's ability to deliver projects effectively (70% or above), and
- 5 out of 18 are satisfied with IT's ability to deliver work orders effectively (70% or above).

Department	Overall Satisfaction with IT?	Constrained by IT capacity?	Satisfaction with IT's ability to deliver projects effectively?	Satisfaction with IT's ability to deliver work orders effectively?
Aurora911	67%	47%	75%	44%
City Attorney	74%	44%	77%	76%
Civil Service	40%	70%	40%	40%
Communications	83%	47%	80%	80%
Court Administration	52%	60%	75%	67%
Finance	68%	56%	66%	70%
Fire	53%	60%	44%	62%
General Management	64%	60%	60%	60%
Housing & Community Services	40%	67%	43%	42%
Human Resources	82%	56%	85%	75%
Judicial	50%	100%	20%	20%
Library & Cultural Services	53%	63%	50%	63%
Parks, Rec & Open Space	61%	45%	65%	58%
Planning & Development Services	60%	56%	70%	70%
Police	32%	63%	36%	35%
Public Defender	60%	40%	-	57%
Public Works	43%	60%	45%	43%
Water	69%	41%	63%	68%

Please note: The color gradient in this heatmap represents the percentage of positive and negative results. Responses falling in the green shades signify that a significant portion of respondents reported favorable experiences. Conversely, the red shades indicate a higher concentration of less positive responses.

The survey findings mirror the findings from internal and external interviews, further reinforcing the issues perceived by IT and City staff. The survey and interview results indicate that the current organizational structure is ineffective in meeting the City's needs. This highlights an opportunity for IT to enhance its partnership with its clients and gain a deeper understanding of the unique requirements of City departments.

The survey results highlighted positive and negative perceptions throughout the City. The perceived level of security friction, which is IT's ability to strike a balance between security measures and user experience efficiently, is at an acceptable level for all departments per the survey. Furthermore, employees perceive that the IT Department successfully handles cybersecurity threats and is dedicated to addressing challenges.

We want to recognize IT's efforts in the last few months. Addressing the challenges identified within IT will require a comprehensive approach, and by addressing them, the IT Department can better assess and align itself with the needs of both internal employees and City departments. As such, the IT Department has engaged Info-Tech's consulting services to develop a strategic plan and road map to help address the identified gaps. This collaboration demonstrates a proactive approach to continuous improvement and ensures the IT Department is ready to meet City goals.

In addition to the results, we identified and assessed various risk areas throughout IT that were outside the scope of this engagement. These areas were documented and included in our list of future audit considerations. Ongoing concerns include the risk of cybersecurity incidents and a particularly poor relationship between IT and the Aurora Police Department (APD). We will consider these items during our risk assessment to identify future engagement areas.

Recommendation

We recommend that the Information Technology Department review the survey results both internally within the department and with key City stakeholders. The IT Department should also develop a comprehensive action plan with a clear timeline to address the areas of deficiencies as identified through the surveys and interviews. The action plan should, at a minimum, address the following key areas:

1. **Strategic Vision & Plan:** The action plan should contain a clear vision and plan to align with the City's and its departments' goals.
2. **Organizational Structure:** The action plan should address any necessary adjustments to the organizational structure and establish clear roles and responsibilities among IT staff to enhance efficiency, accountability, and effective resource allocation.
3. **Communication & Collaboration:** The action plan should address the existing silos within IT and develop strategies to foster effective communication and collaboration. This could include initiatives such as regular team meetings, cross-functional collaboration, and knowledge-sharing among the IT divisions.
4. **Project Management:** The action plan should include the development of a standardized project management methodology and a prioritization framework that considers both objectives and the specific needs of City departments.
5. **Department-Specific Support:** The action plan should address fostering stronger relationships and customer service between IT and City departments with unique needs, such as the Police Department, Public Works, or Housing & Community Services.

The action plan should also incorporate regular progress updates and realistic timelines. By developing a comprehensive action plan, the IT Department will address the identified deficiencies and improve overall effectiveness in meeting City needs. The IT Department can significantly enhance its ability to meet City needs, including developing customized solutions for departments with specialized needs, fostering open lines of communication, and establishing solid and collaborative relationships. Internal Audit will monitor and track the implementation of the action plan and report progress updates to management.

Management Response:

The IT Department appreciates the work of Internal Audit to highlight specific concerns uncovered during their interviews and the InfoTech surveys, as well as their proposed Recommendations to address those concerns. As noted in the audit report, interviews were conducted with IT staff and City staff from August 2022 through March 2023, followed by the InfoTech surveys in March 2023. Concurrent with those efforts, the IT Department developed an Operational Roadmap and Strategic Plan, which was also released in March 2023. The Roadmap was built over several months based on input from City Management, internal IT staff, and City staff representing multiple business units and multiple levels in the organization. As a result, the Roadmap closely aligns with the findings of the Audit Report and the InfoTech surveys both.

Comprehensive work plans have been established to address the Recommendations:

- The Strategic Vision and Plan was established in March 2023. As the business units and the City further refine their own strategic plans, IT will incorporate those plans to align technical strategy with business objectives.
- To address Communication and Collaboration with the Business, IT is formalizing several customer engagement initiatives in Q3 and Q4 2023. These will include monthly meetings with leadership at each department to gain better insight into their existing and upcoming needs, as well as ongoing pain points they experience with technology and/or support. Through these meetings, a formal workplan will be developed and tailored specifically to each business unit. IT will continue these meetings with the business once the work plan is established to regularly report the status against the workplan and identify new areas of need as they arise. Further, a transparency portal will be created on the IT SharePoint page to report on performance metrics, project status, and supporting process documentation. Additional engagement opportunities are currently in planning, with a tentative launch of Q1 2024. To address the internal Communication and Collaboration issues within IT, the department has already initiated weekly stand-up meetings with the Managers and Supervisors, so all teams are in alignment with the expected outcomes, cross-team dependencies, and collaboration required to meet the business goals.
- To address Project Management, IT has created a project life-cycle document that outlines the planning, procurement, and execution process. Supporting process documents will be created to clearly define the workflow and ownership of those steps and will be loaded into the transparency portal in Q4 2023. Additionally, those processes will be reviewed with the business partners so they have insight and understanding of each process, and IT will solicit input to further improve them. Specific to the methodology, standard templates for project planning and status reports will be rolled out in Q4 2023.
- To address Department Specific Support, IT is formally launching a Service Desk in Q3 2023. This is a function that has been absent since 2008 and will include the ability to contact IT via chat, phone call, or in-person appointments. Specific Service Level Objectives (SLOs) have already been defined for each ticket type, and the performance metrics will be measured and reported against those objectives. These will also be reviewed with each business unit during the monthly meetings.
- Organizational Structure will be evaluated based on the data gathered through the steps outlined above. Once IT has a better understanding of the operational needs of each business unit and data regarding the support volume for each area, IT can develop an organizational structure that more closely aligns with the overall objectives, goals, and mission of the City. The structure will be evaluated in Q1 / Q2 of 2024 so IT has sufficient time to gather the data and input from the stakeholders.

Details regarding each of these steps and regular updates will be provided on a recurring basis to Internal Audit and the Management and Finance Policy Committee.

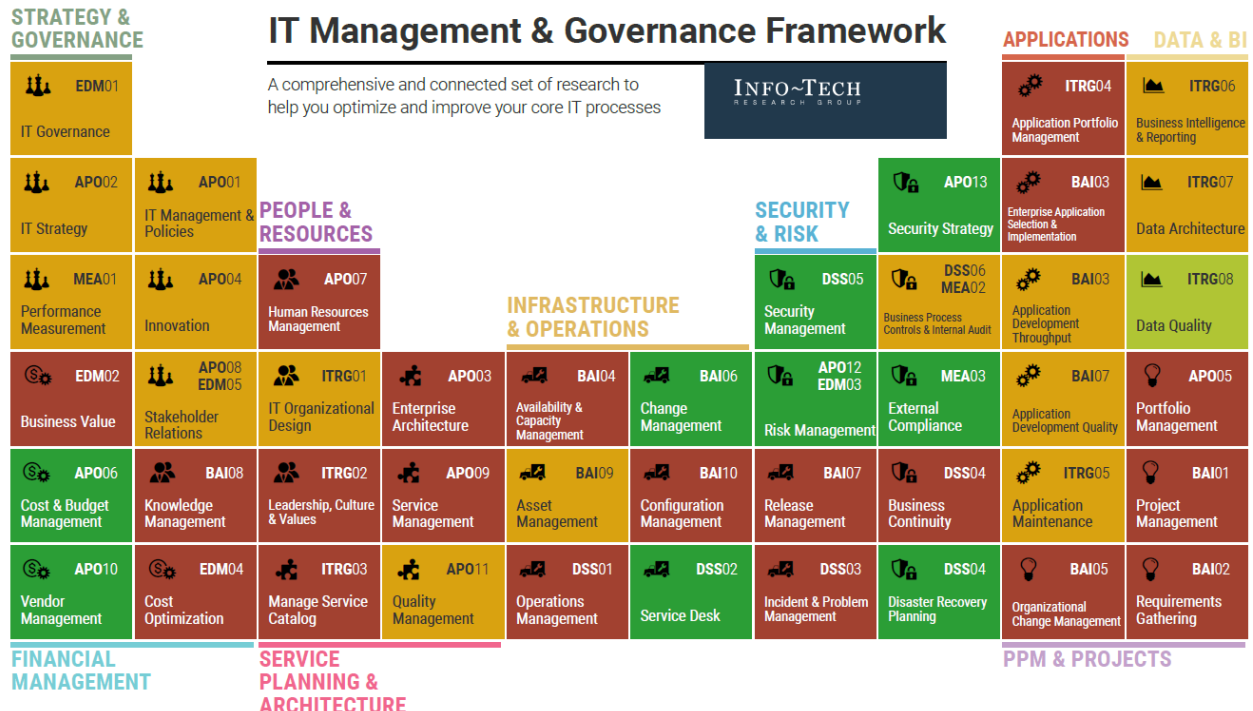
Targeted Implementation Date: September 30, 2024

Business Contact: Chief Information Officer

Business Reviewer: Deputy City Manager

Appendix 1

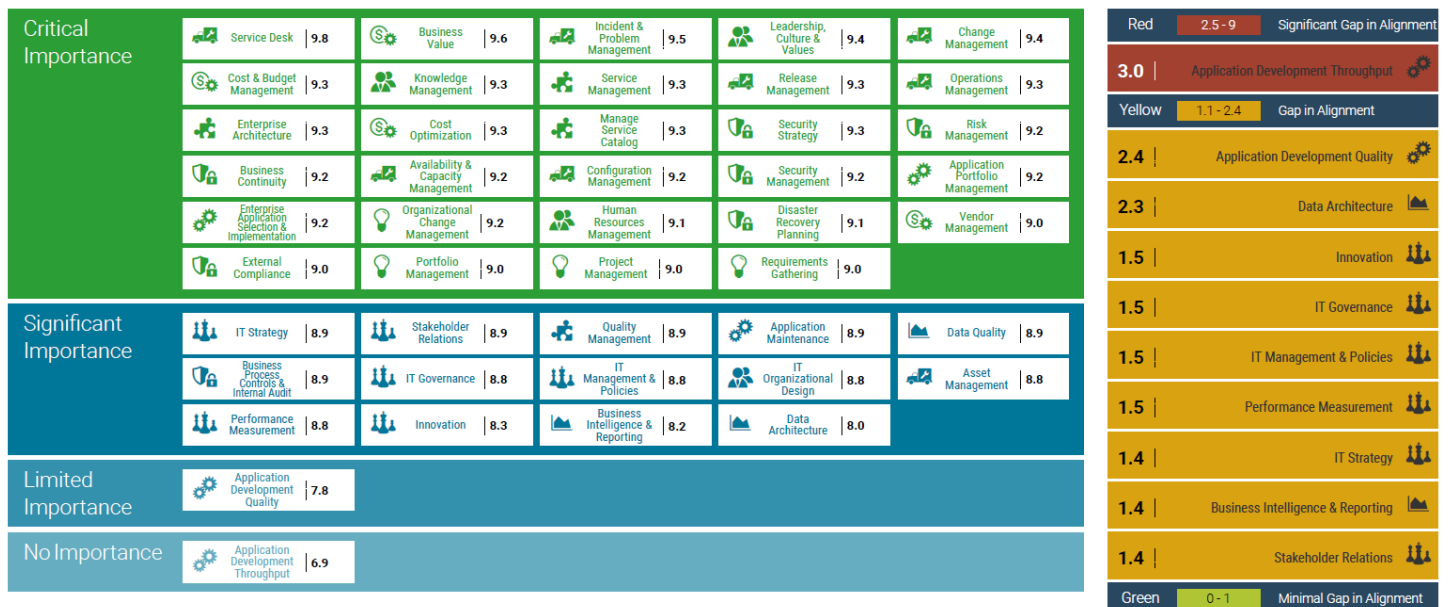
These graphics were obtained from the Info-Tech survey reports.



This diagnostic program was developed using the Info-Tech World Class Operations framework which is made up of IT processes that map to the COBIT standard based on the numbers in the top right corner. This page is a snapshot of the IT process landscape within your IT department. The processes have been colour coded based on your team's importance and effectiveness scores for each IT process. Use this page to help you prioritize your IT process improvement initiatives.

Improve Process Immediately	High Importance and Low Effectiveness	Evaluate Process	Low Importance and Low Effectiveness	Maintain Process	Low Importance and High Effectiveness	Leverage Process	High Importance and High Effectiveness	COBIT 6 AN ISACA FRAMEWORK
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This graphic depicts the IT team's perception of each process' importance and effectiveness. It provides IT with an opportunity to identify gaps in perceptions on IT processes.

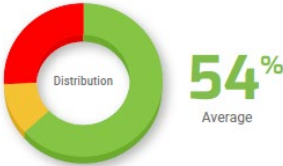


These graphics rank the IT processes based on their perceived importance, from the most important to the least important. This provides IT with an opportunity to better understand which processes the IT team believes are crucial to them and the city and identify gaps in alignment.



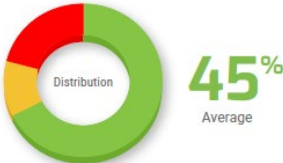
Capacity Needs

Constraint
To what extent is your group constrained and prevented from reaching your strategic goals by IT Capacity?



Shadow IT

Overall Shadow IT
To what extent do you look externally and purchase IT services & applications without corporate IT involvement, due to a lack of internal IT capacity?



Projects

50% Capacity Satisfaction
Satisfaction with the ability to get IT capacity to complete projects.
NET PROMOTER SCORE: -46%

54% Ability to Deliver Effectively
Satisfaction with completed IT projects ability to meet your business needs.
NET PROMOTER SCORE: -31%

Work Orders

53% Capacity Satisfaction
Satisfaction with the ability to get IT capacity to complete Work Orders
NET PROMOTER SCORE: -29%

55% Ability to Deliver Effectively
Satisfaction with completed IT Work Orders ability to meet your business needs
NET PROMOTER SCORE: -27%

Relationship

53% Understands Needs
Satisfaction with IT's understanding of your needs.
trending unavailable

51% Executes Requests
Satisfaction with the way IT executes your requests and meets your needs.
trending unavailable

50% Trains Effectively
Satisfaction with training quality and timing.
trending unavailable

49% Communicates Effectively
Satisfaction with IT communication.
trending unavailable



These graphics provide overall perceptions from employees throughout the City, including perceived capacity constraints, security friction, IT satisfaction and value, and relationship statistics between the IT Department and City departments.

IT DEPARTMENT Staffing Overview

See your Key Staffing Metrics at a glance and how they compare against your peers.

Use this data to determine whether you are in line with benchmarks and if/how to course-correct.

Peer benchmarks are based on data from over 4,000 participating organizations so we can provide meaningful results relevant to your organization.

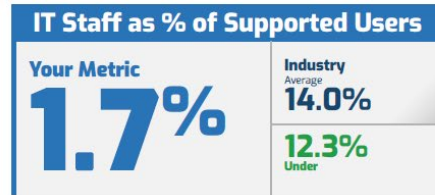
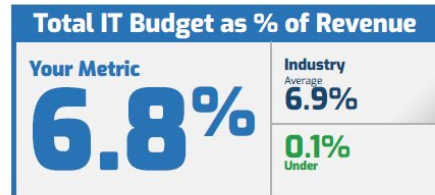
The left column focuses on high level staff and budget ratios to provide visibility as well as an assessment of appropriateness based on benchmarking data.

The right column focuses on IT's management structure, including span of control, seniority ratios and experience ratios. Use these to determine if more managers or experienced hires are appropriate.

City of Aurora, Colorado IT Department

Total # of IT Employees	62
IT Managers/Leaders (has direct reports)	15
# of FTE Focused on Strategy	--
Company Revenue	\$ 493,103,706
IT Budget	\$ 33,715,774
# Users Supported	3,700
Average Experience	19.0 Years
Industry Benchmarking	Government
Industry Count	831

The following data represents a summary of your IT staffing situation as compared with the Info-Tech benchmark. See if you're over or underperforming the benchmark. Your data is based on direct question answers by the survey administrator as well as averaging individual responses from your IT staff.



IT Management Profile



Span of Control

Research suggests 4-7 direct reports is the optimal number for any manager. More than 7 is difficult to adequately manage while less than 4 may be inefficient. Use this data to determine if there are opportunities to reorganize management relationships.

DIRECT REPORTS	#	%	INDUSTRY AVERAGE
0 Direct Reports	34	69%	76%
1-3 Direct Reports	10	20%	15%
4-7 Direct Reports	4	8%	7%
8-10 Direct Reports	1	2%	0%
11+ Direct Reports	0	0%	1%

Seniority of IT Staff

IT departments can suffer both from being too top-heavy and too bottom-heavy. Determine if your seniority profile is in line with your peers and appropriate for your organization, or if there are opportunities to make staffing changes.

SENIORITY	#	%	INDUSTRY AVERAGE	Gap
C-Level	1	2%	11%	1% Under
VP	0	0%		
Director	4	8%		
Manager	10	21%	16%	5% Over
Front-Line	33	69%	73%	5% Under

Years of IT Experience

Successful IT departments have employees with a range of experience. Determine if your department could benefit from adding senior or junior employees.

YEARS	#	%	INDUSTRY AVERAGE	Gap
0-2 Years	6	13%	6%	7% Over
2-5 Years	2	4%	11%	6% Under
6-10 Years	4	8%	20%	11% Under
10+ Years	36	75%	64%	11% Over

This graphic provides the IT staffing overview, including budget, and benchmarks against industry averages.