Performance Audit of IT Service Delivery Effectiveness

City employees reported an overall positive perception of IT Service Delivery; however, there are opportunities to enhance Service Delivery through improved service measurement and analysis.

Office of the City Auditor

City of San Diego

OCA
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June 2021

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Why OCA Did This Study

Services are the main way organizations create value for themselves and their customers. Almost all services today are IT-enabled, which means there is tremendous benefit for the City in creating, expanding, and improving its IT service management capability.

The delivery of the City's technology services spans 31 City departments, over 300 locations, more than 11,500 employees, and the 1.4 million residents of the City. We conducted this audit to review the strengths and opportunities for improvement of the IT Department's Service Delivery from an internal customer's perspective.

What OCA Found

Finding 1: We conducted an Information Technology (IT) Service Delivery Survey of all City employees in April 2021. City employees reported an overall positive perception of IT Service Delivery over the prior twelve months; however, there are opportunities to further enhance Service Delivery through improved service measurement and analysis of Key Performance Indicators (KPIs) for the following services provided by DoIT:

- Help Desk Service
- SAP Service
- Network Service
- IT Financial Service
- GIS Service

What OCA Recommends

We make 7 recommendations to help Department of IT (DoIT) identify improvement opportunities, risks, and issues of IT Service Delivery. Key recommendations include:

- Measuring certain Key Performance Indicators (KPIs) for Help Desk and Deskside Support Service;
- Incorporating certain KPIs to measure and monitor SAP availability during business hours for keeping lost business hours to the bare minimum;
- Working with Business Process Coordinators (BPCs) and City departments to conduct training after performing an improvement/enhancement on SAP functions and measuring certain KPIs on the training;
- Tracking and improving productivity with VPN by measuring certain KPIs for VPN Connection Performance;
- Expanding the source data to include more data desired by customers and using KPIs to measure GIS utilization and usability among City Departments;
- Preparing a data quality report for data created by GIS users, which should include the KPIs for data completeness, data precision, data accuracy, and data consistency;
- Making the budget allocation process more transparent and having certain KPIs for financial management of IT services provided by CGI; and
- Having reporting mechanisms in place for key service metrics and presenting them annually to City Departments in the form of reports or dashboards.

These changes can help DoIT support good decision-making and continual improvement and ensure the current set of services continue to meet the needs of City departments. DoIT agreed to implement all 7 recommendations.

For more information, contact Andy Hanau, City Auditor at (619) 533-3108 or cityauditor@sandiego.gov.

THE CITY OF SAN DIEGO

June 30, 2021

Honorable Mayor, City Council, and Audit Committee Members
City of San Diego, California

Transmitted herewith is a performance audit report on IT Service Delivery Effectiveness. This report was conducted in accordance with the City Auditor's Fiscal Year 2021 Audit Work Plan, and the report is presented in accordance with City Charter Section 39.2. Audit Objectives, Scope, and Methodology are presented in Appendix B. Management's responses to our audit recommendations are presented after page 81 of this report.

We would like to thank staff from the Department of Information Technology. All of their valuable time and efforts spent on providing us information is greatly appreciated. The audit staff members responsible for this audit report are Wendy Minnaert, Danielle Novokolsky, Stephen Gomez, Danielle Knighten, and Kyle Elser.

Respectfully submitted,

Andy Hanau
City Auditor

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Audit Results

Finding 1: City employees reported an overall positive perception of IT Service Delivery; however, there are opportunities to enhance Service Delivery through improved service measurement and analysis.

The overall perception of IT Service Delivery is positive, but DoIT can improve its service measurement and reporting for evaluating certain services.

We conducted an Information Technology (IT) Service Delivery Survey of all City employees in April 2021.[1] The intent of the survey was to measure overall satisfaction with IT Service Delivery over the prior year and review the strengths and opportunities for improvement of IT Service Delivery from an internal customer's perspective.

We identified twelve services provided by the Department of Information Technology (DoIT) and conducted the survey for nine of the services that directly interact with employees. An overview of these nine services is included in **Appendix D**. The remaining three services are internal customer facing support services and are addressed through questions about customer facing services. An overview of these three services is included in **Appendix E**.

Respondents to our survey had a very positive overall perception of DoIT's role in the City. Many commented that DoIT has been good and helpful in resolving IT related issues and in providing technical support to other City departments, as shown in **Exhibit 1**.

[1] A total of 810 responses were returned. These respondents answered questions for the IT services they utilized in the prior twelve months.

Exhibit 1

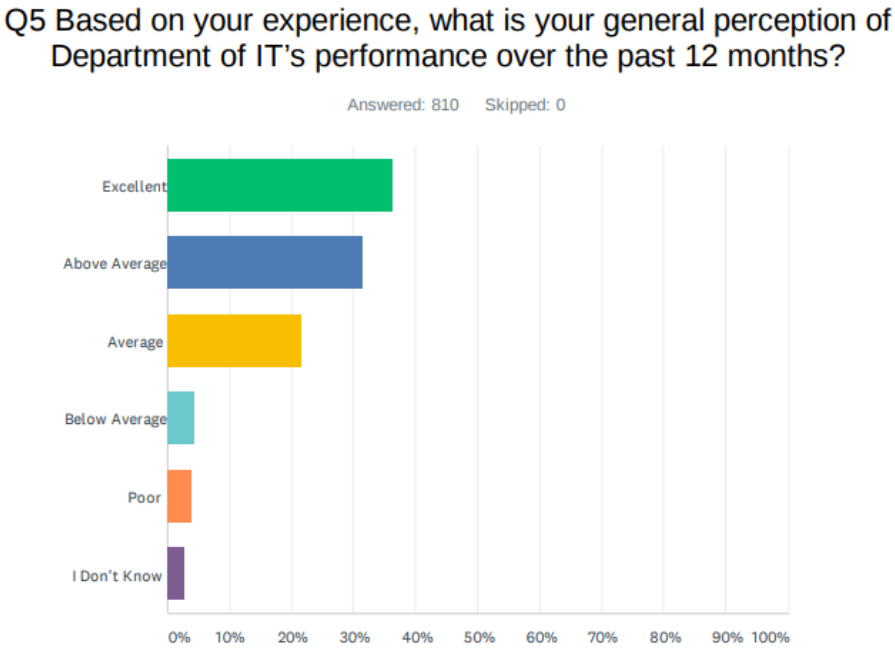
Word Cloud of Comments on Overall Perception of DoIT's Role in the City

Source: OCA generated based on OCA Citywide IT Service Delivery Survey results.

Additionally, respondents were generally satisfied with the overall performance of IT Service Delivery over the prior twelve months. Approximately 67 percent of respondents ranked their perception of DoIT's performance as above average or excellent, while 21 percent ranked DoIT's performance as average, as shown in **Exhibit 2** below.

Exhibit 2

Overall Perception of IT Services



ANSWER CHOICES	RESPONSES	
Excellent	36.17%	293
Above Average	31.48%	255
Average	21.48%	174
Below Average	4.32%	35
Poor	3.83%	31
I Don't Know	2.72%	22
TOTAL		810

Source: OCA Citywide IT Service Delivery Survey results.

While the overall survey results were very positive, as further discussed below, we identified some service areas that can be further improved by DoIT. Most complaints centered around the following five services:

- Help Desk Service
- SAP Service
- Network Service
- IT Financial Service
- GIS Service

Standards require organizations to have service measurement and reporting to evaluate whether a service will facilitate the outcomes desired by consumers.

Organizations should conduct service measurement and reporting to evaluate their services. According to the Information Technology Infrastructure Library (ITIL)[2], the purpose of the service measurement and reporting practice is to support good decision-making and continual improvement by decreasing the levels of uncertainty.

Key Performance Indicators (KPIs) are important metrics that are used to evaluate success in meeting objectives. KPIs measure how well individuals, business units, projects, and companies are performing against their strategic goals. Management can use KPIs to measure the efficiency and effectiveness of a service and the service operation status.

For example, DoIT can measure the availability and reliability of its network by using a KPI to track how often it is unavailable over a month due to network upgrades, maintenance, or unplanned outages. Often, KPI's are defined within a contract to determine the quality of service a vendor delivers.

Service Level Agreements (SLAs) are documented agreements between two parties regarding particular services. SLAs must contain the following quantitative measurements:

- Represent a desired and mutually agreed state of a service;
- Provide additional boundaries of a service scope; and
- Describe agreed and guaranteed minimal service performance.

For example, an SLA may define a Network Availability requirement of 99.99 percent a month, where the vendor provides service credits to the customer when they do not meet that requirement.

[2] The Information Technology Infrastructure Library (ITIL) is a set of Information Technology Service Management (ITSM) practices utilized by some of the most high-profile organizations in the world. Since its inception, ITIL has been adopted by about 90 percent of the Fortune 500 companies in the world. ITIL provides guidance, as well as the risk assessment methodology for IT service delivery management.

According to ITIL, using SLAs may present many challenges; often they do not fully reflect the wider service performance and the user experience. In many cases, using single-system-based metrics as targets can result in misalignment and a disconnect between service partners regarding the success of the service delivery and the user experience. For example, if an SLA is based only on the service availability, it can be deemed to be successful by the provider yet still miss out on significant business functionalities and outcomes that are important to the consumer.

SLAs are about minimal, expected, and agreed quality of a service provided to a customer, while KPIs are about desired operational efficiency and organization goals. It is crucial to measure both SLA compliance and KPIs to increase service delivery quality and to support continual service improvement.

Additionally, according to ITIL, service management reporting presents various service measurements, often through dashboards and report exhibits. Data collected as metrics is usually presented in the form of reports or dashboards to enable the recipient to easily see what needs to be done and take action. As such, the service metrics should answer two main questions:

1. How far are we from our targets?
2. What bottlenecks prevent us from achieving better results?

DoIT relies on defined SLAs to monitor the performance of IT services but does not have KPIs to measure the effectiveness of the delivery of most IT services.

DoIT uses SLAs in the IT services contracts with its primary service delivery vendors—Atos[3], CGI[4] and Zensar[5]—as a tool to measure the performance of core services, such as the IT Help Desk Service, Application Service, and Network Service. However, SLAs with these third-party providers only measure and report on the portion of these services under the providers control, such as the network, and not necessarily what City users actually care about, such as their ability to access SAP or shared drives over Zensar's network, on Atos' servers, and on applications managed by CGI. This may result in a slight disconnect between the vendors and the City's users regarding the success of the service delivery and the user experience. DoIT relies on its SLAs with these vendors to track, monitor, and measure the services provided to the City's users. However, these SLAs define only the minimum expected quality of services provided to the City, which is monitored by DoIT.

KPIs measure the effectiveness and efficiency of a service and refer to the goals of operation efficiency. DoIT can use KPIs to evaluate the effectiveness of its customer support efforts. Currently, DoIT does not have KPIs for Help Desk Service, SAP Service, Network Service, GIS Service, and IT Financial Service. It is crucial to measure both SLAs and KPIs to increase IT Service Delivery quality and support continual service improvement.

[3] Atos is a French multinational information technology (IT) service and consulting company. It specializes in hi-tech transactional services, unified communications, cloud, big data, and cybersecurity services. Services provided to the City by Atos are Data Center, Help Desk, and Deskside Services.

[4] CGI Inc., more commonly known as CGI, is a Canadian global information technology (IT) consulting, systems integration, outsourcing, and solutions company headquartered in Montreal, Quebec, Canada. Services provided to the City by CGI are Application Development and Maintenance.

[5] Zensar Technologies Limited is an Indian publicly traded software and services company. Its primary business involves providing digital and technology solutions to global customers. Services provided to the City by Zensar are Network and Security Services.

Help Desk Service:

Our survey results indicated that users' issues were not always fully resolved and resolved in a reasonable time frame by Help Desk.

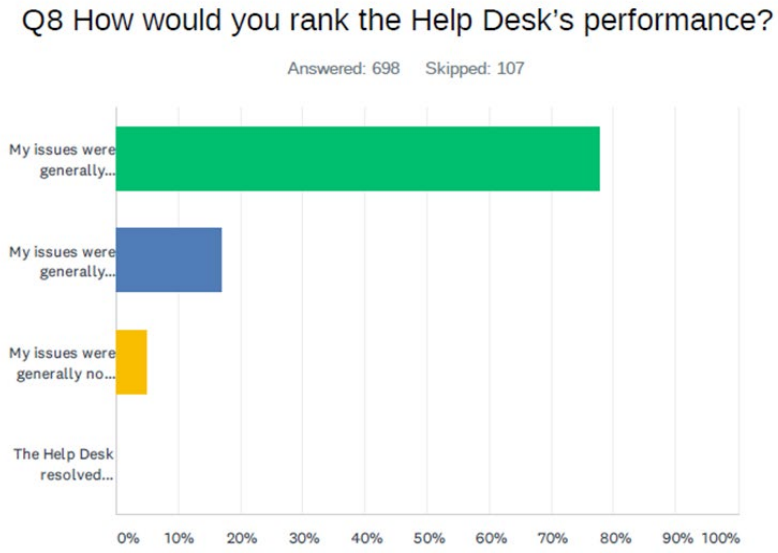
Our survey showed that 90 percent of respondents used Help Desk Service and 74 percent of them used it more than one to two times in the prior twelve months. Users reported that they were generally satisfied with aspects of Help Desk Service. However, we have identified opportunities for DoIT to further improve Help Desk Service performance.

Per the survey results, 22 percent of the respondents' issues were generally not fully resolved by Help Desk, as shown in **Exhibit 3** below.

Additionally, the survey results from multiple choice and open-ended questions indicated that sometimes it took Help Desk unreasonably long to resolve the issues or Help Desk routed the tickets to the wrong service provider due to lack of understanding of departments' business requirements and business processes, as shown in **Exhibit 4** below.

Exhibit 3

Help Desk Performance

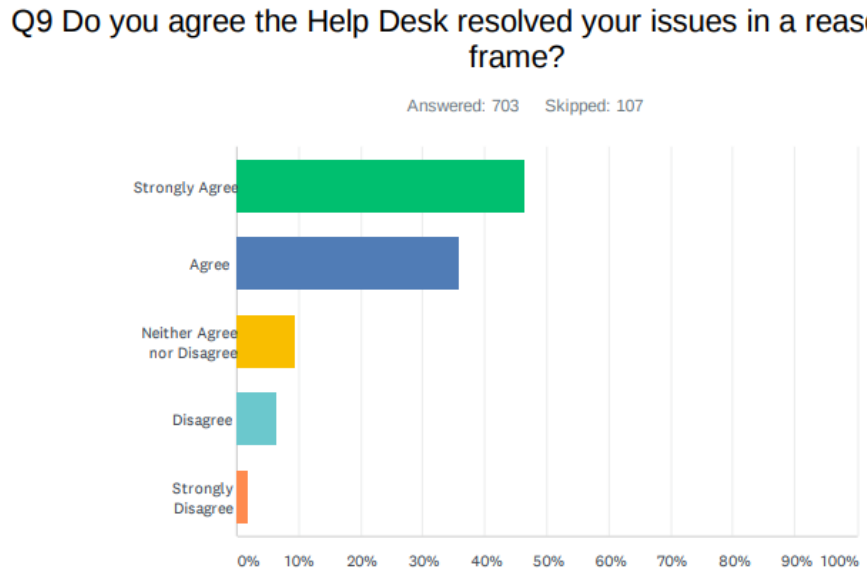


ANSWER CHOICES	RESPONSES	
My issues were generally resolved satisfactorily	77.79%	543
My issues were generally partially resolved	17.05%	119
My issues were generally not resolved	5.01%	35
The Help Desk resolved unrelated issues	0.14%	1
TOTAL		698

Source: OCA Citywide IT Service Delivery Survey results.

Exhibit 4

Time to Resolution for Help Desk Service



ANSWER CHOICES	RESPONSES	
Strongly Agree	46.51%	327
Agree	35.85%	252
Neither Agree nor Disagree	9.39%	66
Disagree	6.54%	46
Strongly Disagree	1.71%	12
TOTAL		703

Source: OCA Citywide IT Service Delivery Survey results.

DoIT uses SLAs with Atos to track the performance of Help Desk Service but does not conduct KPI measurements.

DoIT uses SLAs in the IT services contracts with Atos as a tool to measure the performance of Help Desk and Deskside Support Service. The SLA for Help Desk Service between Atos and the City has the following metrics and measures:

- Service Desk Availability
- Call Volume
- Third Party Provider's Notification Time
- Response Time
- Acknowledgement Time
- First Contact Resolution Percentage

- Level 1 Time to Resolution (for the issues Level 1 can resolve only)
- Incident Closure Notice Time
- Password Reset Time
- Period Customer Satisfaction

Currently, DoIT does not have KPIs for Help Desk Service to identify potential opportunities to improve the quality of the service, customer satisfaction, and service provider's productivity.

DoIT cannot identify the efficiency and quality of the Help Desk Service and improve both customer satisfaction and Atos productivity due to the lack of KPIs.

Lack of KPIs to measure Help Desk Service performance, such as First Contact Resolution Rate, Average Resolution Time, Ticket Backlog and Cost per Ticket, it is difficult for DoIT to figure out how efficient the Atos support process is. In addition, service may take too long to resolve and may result in lost employee productivity, and DoIT may not identify potential opportunities to deliver faster, better service.

Additionally, every Service Desk should attach a red flag to recurring incidents. Help Desk may have many repeat incidents which create unnecessary demand on the Service Desk staff and waste users' time.

To address the measurement of key performance components within the Help Desk service, we make the following recommendation:

Recommendation 1 To ensure that the Help Desk meets required service levels and identifies improvement opportunities, service risks, and issues of Help Desk services delivery, the Department of Information Technology (DoIT) should measure the following Key Performance Indicators (KPIs) for Help Desk and Deskside Support Service:

a) First Contact Resolution (FCR) rate: This measures the percentage of customers' questions and requests solved at first contact.

b) Average Resolution Time: This measures the average elapsed time from when an incident is reported (ticket is opened) until the incident is resolved (ticket is closed).

c) Ticket backlog: This measures how many unresolved tickets are waiting to be handled by service provider over a particular time frame.

d) Cost per ticket: This measures the total monthly operating expense of the Help Desk divided by the number of tickets.

e) Recurring Incidents: This measures the percentage of incidents that can be classified as a repeat incident (already occurred multiple times), relative to all reported incidents within the measurement period. (Priority 2)

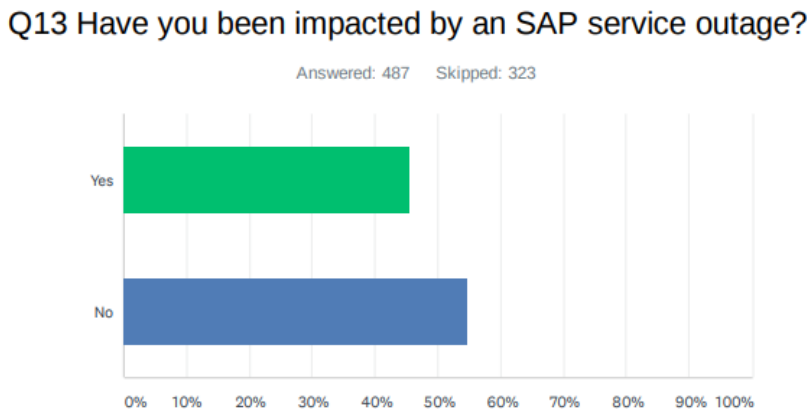
SAP Service:

Our survey results indicated that many users have been impacted by an SAP service outage that affected their department's business functions.

Our survey results showed that more than 45 percent of users had been impacted by an SAP service outage in the prior twelve months, as shown in **Exhibit 5** below. Of those that experienced an SAP service outage, 63 percent experienced moderate or severe impacts, and 30 percent experienced impact to their department's vital business functions more than a few times over the year, as shown in **Exhibit 6** and **Exhibit 7**.

Exhibit 5

SAP Service Outage

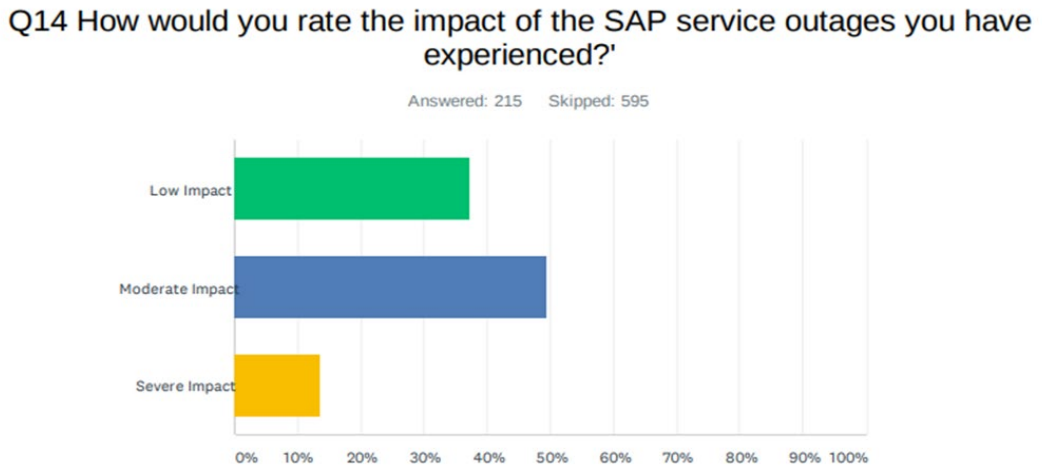


ANSWER CHOICES	RESPONSES	
Yes	45.38%	221
No	54.62%	266
TOTAL		487

Source: OCA Citywide IT Service Delivery Survey results.

Exhibit 6

Impact of SAP Service Outage

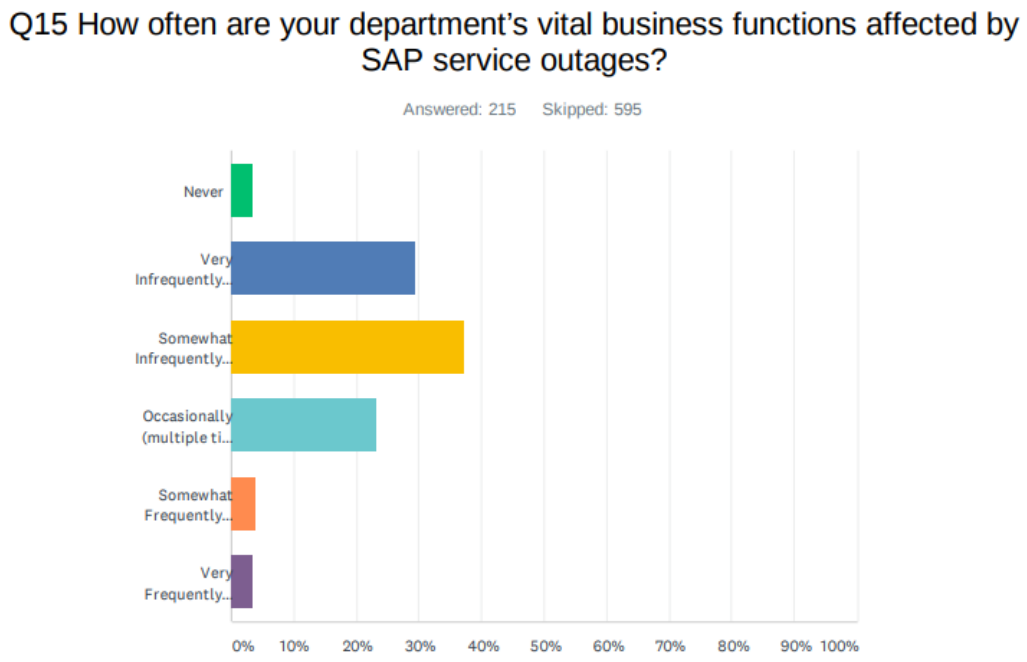


ANSWER CHOICES	RESPONSES	
Low Impact	37.21%	80
Moderate Impact	49.30%	106
Severe Impact	13.49%	29
TOTAL		215

Source: OCA Citywide IT Service Delivery Survey results.

Exhibit 7

Business Impact of SAP Service Outage



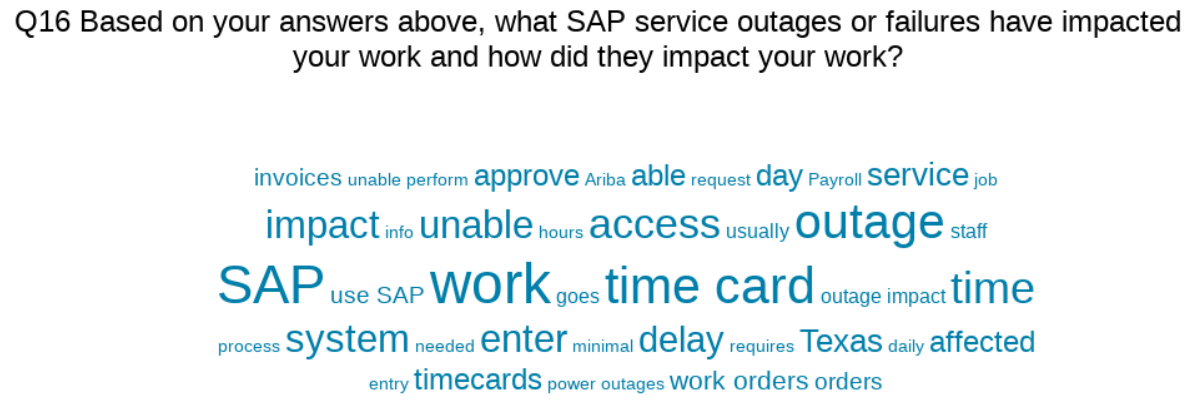
ANSWER CHOICES	RESPONSES	
Never	3.26%	7
Very Infrequently (once a year)	29.30%	63
Somewhat Infrequently (a few times a year)	37.21%	80
Occasionally (multiple times a year)	23.26%	50
Somewhat Frequently (once a month)	3.72%	8
Very Frequently (multiple times a month)	3.26%	7
TOTAL		215

Source: OCA Citywide IT Service Delivery Survey results.

Comments received from the open-ended question indicate that SAP outages impacted the users' work performances such as paying invoices, accessing work orders, entering timecard, approving payroll, and generating financial reports, as shown in **Exhibit 8.**

Exhibit 8

Word Cloud of Comments on the Business Impact of SAP Outage/Failures



Source: OCA generated based on OCA Citywide IT Service Delivery Survey results.

DoIT uses SLAs with CGI to measure the performance of SAP but SAP downtime is not tracked and measured.

The SLA for SAP service between CGI and the City has the following metrics and measures for Application Maintenance Services for managed applications:

- Time to Notify Users – Time between when Help Desk sends the incident to CGI and when CGI accepts the incident
- Incident Resolution Time
- Root Cause Analysis – Root Cause Analysis Report is to be created within 24 hours of Incident Resolution
- Availability of Qualified Staff
- Overall Customer Satisfaction
- Rework Rate

These SLAs apply for almost 300 City applications managed by CGI, which provides augmented staff for SAP Services, while the City is responsible for managing SAP Services.

The Data Center contract between Atos and the City has additional SLAs for servers and incident resolution listed as below:

- System Availability – 100 Percent minus Outage Duration/Scheduled Time

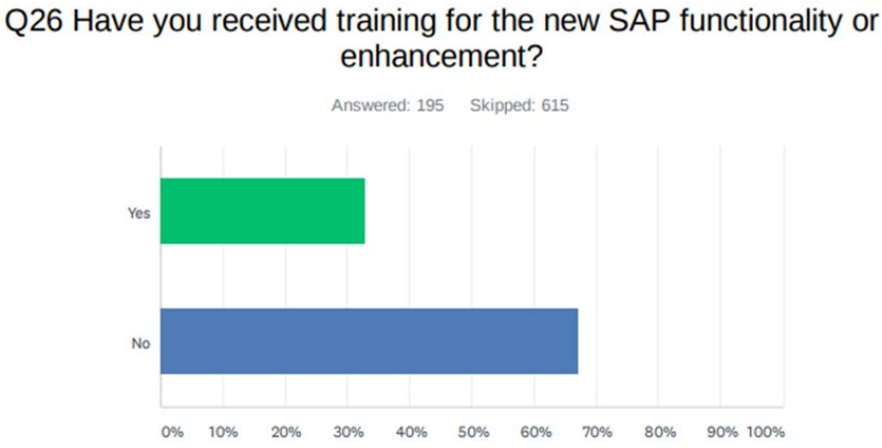
- Unscheduled Downtime for Each Client Application – Not to exceed 3 times per month
- Batch Processing Time
- Job Scheduler Management
- Disaster Recovery Testing – Successful annual test of each DR recovery

Our survey results indicated that most users have not received training for new SAP functionalities or enhancements.

Additionally, our survey results showed that SAP users are generally satisfied with SAP business improvement/enhancement service. However, the survey results indicated that 67 percent of users have not received training after new SAP functionality or enhancement implementation, as shown in **Exhibit 9**.

Exhibit 9

SAP Training for the New Functionality or Enhancement



ANSWER CHOICES	RESPONSES	
Yes	32.82%	64
No	67.18%	131
TOTAL		195

Source: OCA Citywide IT Service Delivery Survey results.

DoIT cannot track lost business hours and its impact on business without measuring and

SAP is one of the most mission critical applications for the City, facilitating centralized Citywide financials, procurement, human resources, and other core processes. An SAP outage during business hours can interrupt the entire workflow system and, as

monitoring availability for critical applications.

a result, can leave employees unable to complete their tasks until the problem is fixed. Delays in one area can contribute to delays or problems in others. The restoration of the SAP system could also result in a workflow backup that requires significant effort to resolve. By understanding SAP downtime trends, DoIT can prioritize and implement corrective action to prevent additional SAP failures. Additionally, tracking lost business hours has a profound effect on how, when, and where maintenance resources are used.

Training KPIs would allow DoIT to ensure that impacted users receive training prior to new functionality rollout and track issues around training and the enhancement.

Additionally, DoIT is regularly working with departments to update and improve SAP's functionality and streamline business processes. As DoIT rolls out these changes, staff who use these processes require training to ensure they can still perform their roles using the updated processes and can fully utilize the new functionality.

The survey results indicated that users do not always receive training or notifications that their SAP processes have been updated, resulting in lost work hours as they attempt to relearn their tasks in the updated environment. DoIT can use KPI's to track the number of impacted that users receive notification and training with a target to reach all impacted users prior to the new functionality rollout.

Training KPIs can help identify issues with the training. Monitoring training KPIs provides faster feedback which in turn allows DoIT to perform the post implementation review for SAP improvement/enhancement.

Lastly, tracking for SAP training effectiveness will allow DoIT to personalize the training based on the skill and knowledge gaps of department users.

To ensure that DoIT can measure the impacts of SAP outages and ensure users receive training prior to functionality changes, we make the following recommendations:

Recommendation 2 The Department of Information Technology (DoIT) should incorporate the following KPIs to measure and monitor SAP availability during business hours for keeping lost business hours to the bare minimum:

a) Number of unscheduled downtime events in the last quarter;

b) Average amount of unscheduled downtime per event in the last quarter;

c) Longest unscheduled downtime event;

d) Critical SAP module availability (such as Ariba, EAM, etc.); and

e) Length of time to recover from last unscheduled downtime event. (Priority 2)

Recommendation 3 To ensure that users acknowledge full capabilities of new SAP functionalities, the Department of Information Technology (DoIT) and the Business Process Coordinators (BPCs) should work with City departments to conduct training after performing an improvement/enhancement on SAP functions and measure the following Key Performance Indicators (KPIs) on the training:

a) Training Completion Percentage Rate; and

b) Employee Training Satisfaction Rates. (Priority 2)

Network Service:

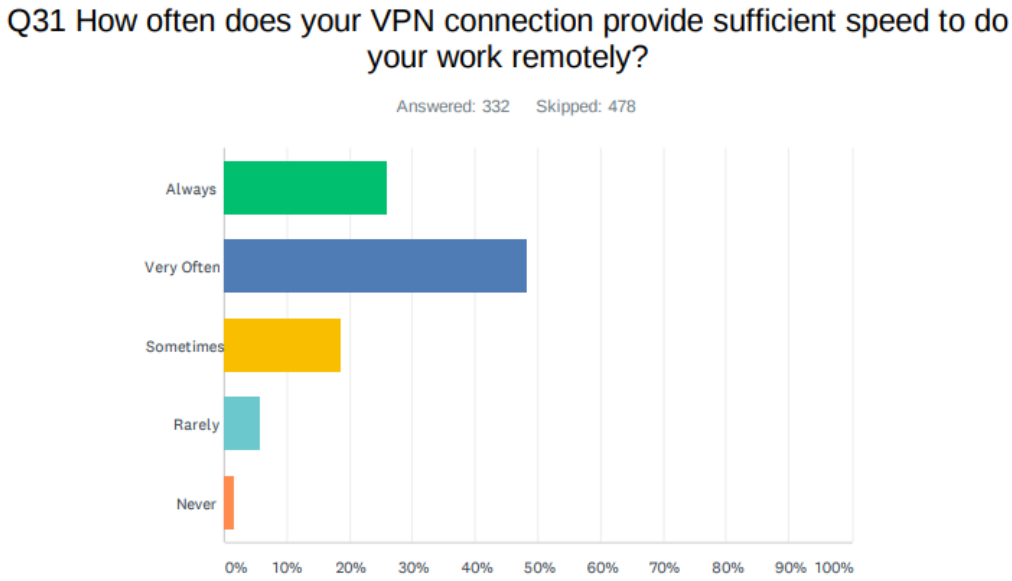
Our survey responses indicated that some users' work performance was impacted after connecting to VPN while working remotely.

The survey responses indicated that users have an overall positive view of the connection, stability, and reliability of Virtual Private Network (VPN). However, the survey results also showed that 26 percent of respondents' VPN connection cannot provide sufficient speed for working remotely sometimes or all the time, as shown in **Exhibit 10** below.

Comments received from the open-ended questions indicate that VPN slows down internet speed, affects application performance, and impacts ability to use shared drives, thereby impacting productivity of users while working remotely.

Exhibit 10

VPN Speed Affects Work Productivity



ANSWER CHOICES	RESPONSES	
Always	25.90%	86
Very Often	48.19%	160
Sometimes	18.67%	62
Rarely	5.72%	19
Never	1.51%	5
TOTAL		332

Source: OCA Citywide IT Service Delivery Survey results.

DoIT does not have KPIs for VPN connection performance to track and improve productivity with VPN.

DoIT does not have a service requirement for tracking VPN availability in its SLA with Zensar. Additionally, VPN can slow down an employee's internet speed, applications, and impact shared drive performance as it routes the employee's internet traffic through the City's network. These issues can be caused by different factors, such as VPN encryption level, VPN server load, VPN server location, etc. Currently, DoIT does not have a KPI for VPN connection performance to track and identify VPN issues to improve productivity with VPN.

Lack of KPIs for VPN connection performance

Poor remote network speed may impact remote work productivity due to mismanaged VPN performance, for example:

may result in reduced remote work productivity.

- Business-critical applications may be impeded, resulting in reduced productivity;
- Substandard customer service may lead to a poor end-user experience; and
- Slow file sharing and lags in video conferences may occur, resulting in poor collaboration within and across teams.

To ensure that DoIT can identify, track, and resolve VPN impacts to employee's ability to complete their work remotely, we make the following recommendation:

Recommendation 4 In order to improve remote work productivity, the Department of Information Technology (DoIT) should consider tracking and improving productivity with VPN by measuring the following Key Performance Indicators (KPIs) for VPN Connection Performance:

a) Application (such as SAP) Usage by VPN Connection – shows the trend of usage (users and system usage) before and after VPN connection; and

b) Device Health Trend – shows the device health and performance before and after VPN connection. (Priority 2)

GIS Service:

Our survey results showed that DoIT can increase GIS service utilization by expanding and improving the quality of the source data.

Survey respondents were very satisfied with GIS Service. However, our survey indicated that approximately 21 percent of respondents cannot utilize GIS Services on their projects because the data they need does not exist, as shown in **Exhibit 11**. Thus, GIS utilization can be increased if the source data includes more data desired by customers.

Additionally, approximately 26 percent of the users feel that analyses and conclusions are compromised based on the quality of the GIS data, as shown in **Exhibit 12**. Errors, inaccuracies, incompleteness, and imprecision of GIS data can affect the quality of many types of GIS projects, thereby compromising the analyses and conclusions.

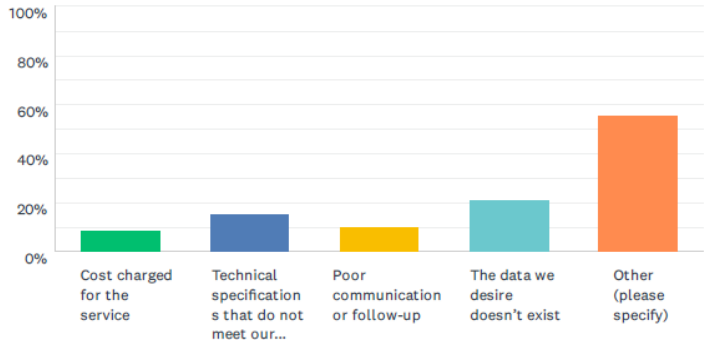
Currently, DoIT does not have any measurement for tracking and monitoring GIS service utilization and GIS data quality.

Exhibit 11

GIS Service Utilization

Q82 What factors have prevented you from utilizing GIS services on other projects? (select all that apply)

Answered: 157 Skipped: 653

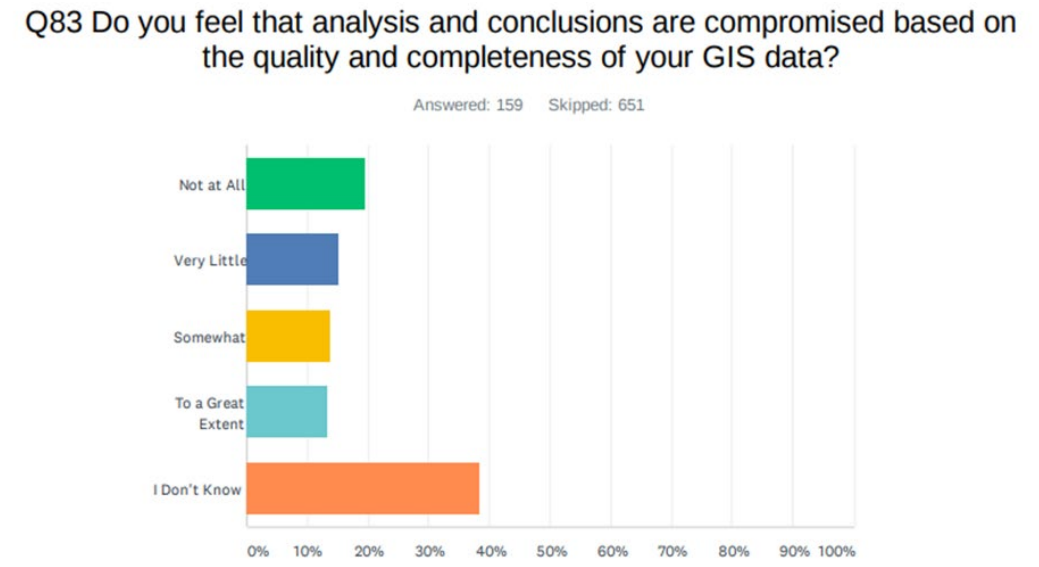


ANSWER CHOICES	RESPONSES	
Cost charged for the service	8.28%	13
Technical specifications that do not meet our needs	15.29%	24
Poor communication or follow-up	10.19%	16
The data we desire doesn't exist	21.02%	33
Other (please specify)	55.41%	87
Total Respondents: 157		

Source: OCA Citywide IT Service Delivery Survey results.

Exhibit 12

Quality and Completeness of GIS Data



ANSWER CHOICES	RESPONSES	
Not at All	19.50%	31
Very Little	15.09%	24
Somewhat	13.84%	22
To a Great Extent	13.21%	21
I Don't Know	38.36%	61
TOTAL		159

Source: OCA Citywide IT Service Delivery Survey results.

To ensure that GIS Service is highly and effectively utilized by users, we make the following recommendation:

Recommendation 5 To facilitate increased GIS Service utilization, the Department of Information Technology (DoIT) should consider expanding the source data to include more data required by customers and using KPIs to measure GIS utilization and usability among City Departments.

Additionally, in order to improve GIS data quality, DoIT should consider preparing a data quality report for data created by GIS users, which should include the KPIs for data completeness, data precision, data accuracy, and data consistency, such as the data error rate, percentage of untraceable data, etc. (Priority 3)

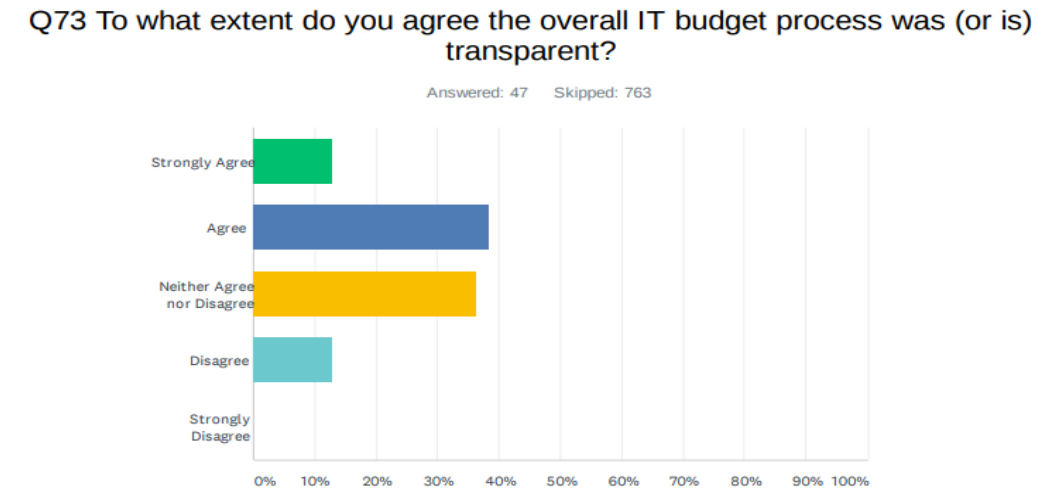
IT Financial Service:

Our survey indicated that DoIT can make the overall IT budget process more transparent.

Our survey results indicated that users have a positive view of IT Financial Service. Approximately half of our respondents for the IT Financial service found the IT Budget process to be transparent, while 36 percent were neutral, and 12 percent found it to be not transparent, as shown in **Exhibit 13**. However, DoIT can further improve transparency by creating KPIs to better track the non-discretionary allocation process and the budget tracking process for system development projects in line with the best practices.

Exhibit 13

IT Budget Process Transparency



ANSWER CHOICES	RESPONSES	
Strongly Agree	12.77%	6
Agree	38.30%	18
Neither Agree nor Disagree	36.17%	17
Disagree	12.77%	6
Strongly Disagree	0.00%	0
TOTAL		47

Source: OCA Citywide IT Service Delivery Survey results.

DoIT uses SLAs with CGI to measure the performance of Application

The following metrics and measures are for Application Development/Enhancement Services:

- Project Estimation (actual cost vs. estimated cost)
- Service Requests Completion Time

Development/ Enhancement but cost/benefit is not tracked and measured.

- Milestone Completion – Completed by scheduled completion date
- Functional Requirements Met
- Overall Customer Satisfaction
- Missed or Incomplete Project Change Requests
- Project Change Requests – Service Provider Deviation

DoIT cannot optimize the cost of IT services, reduce the risk of over-spending, and improve the reliability of budgeting predictions without KPIs of financial management for IT services.

IT Budgeting enables DoIT to plan future IT expenditures, reducing the risk of over-spending and ensuring the budget is available to cover the predicted spend. Additionally, IT Budgeting allows DoIT to compare actual costs with previously predicted costs in order to improve the reliability of budgeting predictions. DoIT cannot optimize the cost of IT services, reduce the risk of over-spending, and improve the reliability of budgeting predictions due to lack of KPI measurement of IT Financial Service.

To ensure that DoIT aligns IT investment with City departments' business needs, makes good decisions allocating IT Budget, and improves the reliability of budget predictions, we make the following recommendation:

Recommendation 6

In order to optimize the cost of IT services, reduce the risk of over-spending and improve the reliability of budget predictions, the Department of Information Technology (DoIT) should consider making the budget allocation process more transparent and having the following Key Performance Indicators (KPIs) for financial management of IT services provided by CGI:

a) Cost/Benefit Estimation – Percent of project files containing cost/benefit estimates.

b) Post Implementation Review – Percent of projects where costs and benefits are verified after implementation. (Priority 2)

Reporting Mechanisms for KPIs:

DoIT does not have reporting mechanisms in place for services provided and does not present them in the form of reports or dashboards to the City Departments.

DoIT does not have mechanisms in place for reporting the relevant KPI metrics for all services. Service measurement reporting is to ensure that the current set of services continues to meet the needs of City departments. Benefits of service performance reporting include:

- Improved decision-making process;
- Continuous feedback to DoIT and the third-party service providers; and
- Effective communication with City Departments and upper management in the City.

Service measurement such as KPIs, need to be visible, accessible, and transparent. Lack of service measurement reporting results in little transparency over the efficiency and effectiveness of IT Services and their impacts on employees' productivity, which could be affected by IT Service failures. Additionally, lack of service performance reporting makes it difficult to spot trends within IT Services provided, identify weakness, and find and capitalize on strengths.

To provide transparency over key performance measures available to departments, personnel, and management impacted by these services, we make the following recommendation:

Recommendation 7

To ensure that the current set of services continue to meet the needs of City departments, the Department of Information Technology (DoIT) should have reporting mechanisms in place for key service metrics, including those identified in this report. Additionally, DoIT should present them annually to City Departments in the form of reports or dashboards, which can be incorporated into the reporting of IT Budget, IT Strategy, or other effective forums such as an intranet or internet site.

The reports or dashboards should indicate how far DoIT is from its targets and what bottlenecks, if any, prevent it from achieving better results. (Priority 2)

Appendix A: Background

IT Service Introduction

According to the World Trade Organization (WTO)6, services comprise the largest and most dynamic component of both developed and developing economies. Services are the main way that organizations create value for themselves and their customers. Almost all services today are IT-enabled, which means there is tremendous benefit for organizations in creating, expanding, and improving their IT service management capability.

Technology is advancing faster today than ever before. Developments such as cloud computing7, Software as a Service (SaaS)8, and machine learning9 have opened fresh opportunities for creating values for organizations and have led to IT becoming an important business driver and source of competitive advantage. In turn, this positions IT service management as a key strategic capability. Information and technology are becoming more thoroughly integrated with other organizational capabilities, silos are breaking down, and cross-functional teams are being utilized more widely. Service management is changing to address and support this organizational shift and ensure opportunities from new technologies and new ways of working are maximized.

Parties Involved in IT Service Delivery for City of San Diego

The delivery of the City's technology services spans 31 City departments, over 300 locations, more than 11,500 employees, and the 1.4 million residents of the City of San Diego. Staffing for City technology services is supported by 71 City IT professionals and 45 public-safety radio engineers and support staff.

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[6] The World Trade Organization (WTO) is an intergovernmental organization that regulates and facilitates international trade between nations.

[7] Cloud computing is the delivery of different services through the Internet, including data storage, servers, databases, networking, and software.

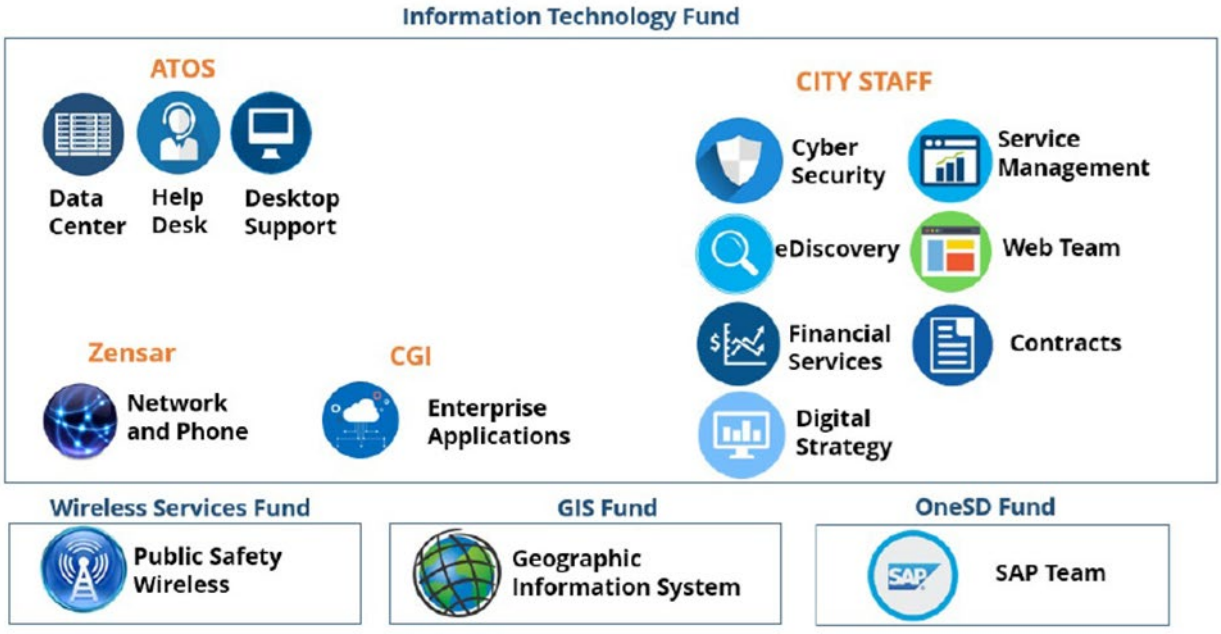
[8] Software as a Service (SaaS) allows users to connect to and use cloud-based apps over the Internet. including email, calendaring, and office tools (such as Microsoft Office 365).

[9] Machine learning is the concept that a computer program can learn and adapt to new data without human intervention.

In addition to being supported by City staff, the services are supported by contracts with CGI10(Application Development and Maintenance), Atos11 (Data Center, Help Desk, Deskside Services) and Zensar Technologies12 (Network/Security), along with other highly specialized and trained consultants, as needed to fulfill the needs of the City's IT requirements, as shown in **Exhibit 14** and **Exhibit 15** below.

Exhibit 14

City of San Diego's IT Services



Source: DoIT FY2021–FY2025 Strategic Plan.

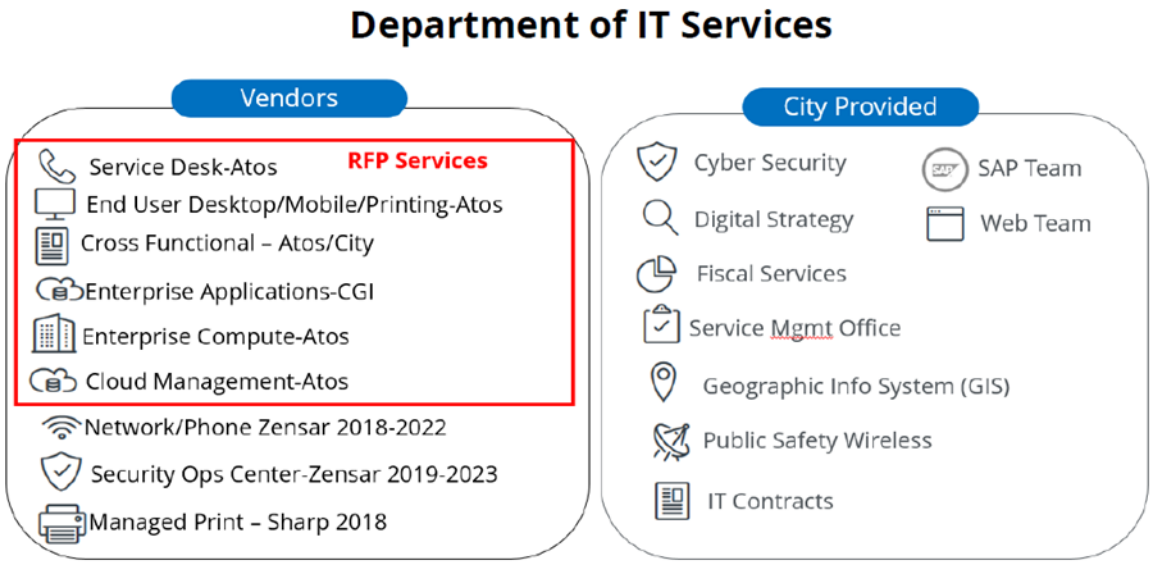
[10] CGI Inc., more commonly known as CGI, is a Canadian global information technology (IT) consulting, systems integration, outsourcing, and solutions company headquartered in Montreal, Quebec, Canada. Services provided to the City by CGI are Application Development and Maintenance.

[11] Atos is a French multinational information technology (IT) service and consulting company. It specializes in hi-tech transactional services, unified communications, cloud, big data, and cybersecurity services. Services provided to the City by Atos are Data Center, Help Desk, and Deskside Services.

[12] Zensar Technologies Limited is an Indian publicly traded software and services company. Its primary business involves providing digital and technology solutions to global customers. Services provided to the City by Zensar are Network and Security Services.

Exhibit 15

Department of IT Services

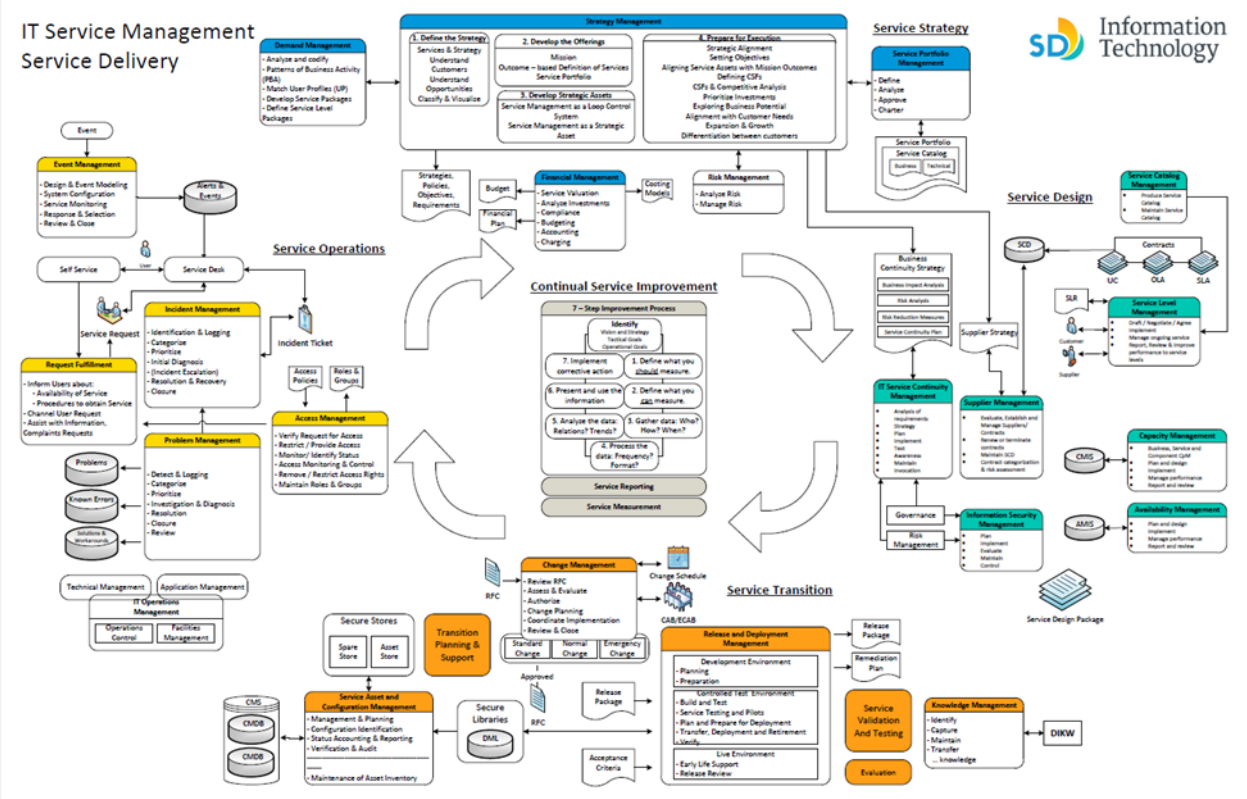


Source: DoIT.

Department of IT (DoIT) created the IT Service Management Processes and Framework, which includes Service Strategy, Service Design, Service Transition, Service Operation, and Continual Service Improvement as shown in **Exhibit 16** below.

Exhibit 16

IT Service Management Delivery Framework



Source: DoIT.

DoIT plans to have new IT contracts starting by the end of FY2021. There will be significant changes to service delivery with new vendors, processes, and tools that will be used to deliver services under the new contracts. The new procedures will be developed, and the department's ServiceNow solution will be used for a service catalog and automation of Information Technology Infrastructure Library (ITIL) service delivery processes.

IT Service Catalogue

An IT Service Catalogue is a list of technology resources and offerings available from the IT service provider within an organization. Standards require that IT organizations provide a single service catalogue to enable IT's customers to centrally access its services and ensure that the customers are aware of the services available.

DoIT uses an online portal, CityNet, to enable the list of services to be communicated to City employees. However, it does not include all the services provided by DoIT. DoIT does not have a single IT Service Catalogue to provide a single source of consistent information on all services and service offerings for the City.

Currently, DoIT is in the process of building a formal service portfolio and service catalog. The Chief Information Officer informed us that for the past two years, DoIT has been working on request for proposals (RFPs) for its major IT services contracts and tools that will allow it to provide a formal service portfolio and service catalog. The new IT Service Catalog will be embedded in the ServiceNow system and will streamline service delivery for the user community. Under DoIT's old contracts and tools, these capabilities did not exist. The current CityNet system has minimal capabilities for an IT Service Catalog but is in use until a fully supported/budgeted solution becomes available in the next year.

Organizations Providing Guidance for IT Service Management

Two major organizations provide requirements and guidance for IT Service Management from different perspectives:

Information Systems Audit and Control Association (ISACA), through Control Objectives for Information and Related Technologies (COBIT 5) framework, provides governance guidance and the management framework to assess the effectiveness of IT Service Delivery.

Information Technology Infrastructure Library (ITIL) provides guidance, as well as the risk assessment methodology for IT Service Delivery management.

COBIT 5 is the overarching business and management framework for governance and management of enterprise IT. It was created by ISACA, an independent, nonprofit, global association engaged in the development, adoption, and used of globally accepted, industry-leading knowledge and practices for information systems. COBIT 5 provides guidance for framing this audit.

The Information Technology Infrastructure Library (ITIL) is a set of Information Technology Service Management (ITSM) practices utilized by some of the most high-profile organizations in the world. Since its inception, ITIL has been adopted by about 90 percent of the Fortune 500 companies in the world. ITIL provides guidance, as well as the risk assessment methodology for IT Service Delivery management. We used ITIL to compare the City's IT service management identified to determine if the City performed the service management effectively, and to develop a targeted survey to the recipients of these services to assess the effectiveness of the services delivered.

ITIL includes 14 general management practices, 17 service management practices, and 3 technical management practices, which are listed in **Exhibit 17** below. DoIT works to incorporate these management practices into its service delivery model.

Exhibit 17

ITIL Management Practices

Table 5.1 The ITIL management practices

General management practices	Service management practices	Technical management practices
Architecture management	Availability management	Deployment management
Continual improvement	Business analysis	Infrastructure and platform management
Information security management	Capacity and performance management	Software development and management
Knowledge management	Change control	
Measurement and reporting	Incident management	
Organizational change management	IT asset management	
Portfolio management	Monitoring and event management	
Project management	Problem management	
Relationship management	Release management	
Risk management	Service catalogue management	
Service financial management	Service configuration management	
Strategy management	Service continuity management	
Supplier management	Service design	
Workforce and talent management	Service desk	
	Service level management	
	Service request management	
	Service validation and testing	

Source: ITIL Foundation v4.

Services Provided by Department of IT

DoIT provides Citywide technology strategy, operational support of applications, infrastructure, wireless technologies, enterprise application services, and manages IT services contracts and assets. We identified twelve services provided by DoIT, as shown in **Exhibit 18** below.

Exhibit 18

IT Services Provided by DoIT

Service Name and Provider	Summarized Description
Help Desk and Deskside Support Service (Atos)	Provides information or a path for users to report IT issues, queries, and requests through the service desk.
Enterprise Applications / SAP Services (SAP Team)	Ensures the City's SAP systems are available, provides technical support and training, and manages SAP enhancements to improve the users' SAP experience.
Network and Phone Service (Zensar)	Manages and supports the City's Virtual Private Network (VPN) systems, the call center services, and data and voice (phone) network systems.
Application Service (CGI)	Manages the City's applications, including remote working tools and the development, maintenance, upgrades, roadmaps, and support of all City applications.
Cyber Security and eDiscovery Service (Cyber Security Team)	Protects the City's data and systems, develops and implements security policies/controls, performs risk management, and manages eDiscovery Service, which includes searches for California Public Records Act (PRA) requests, investigations, subpoenas, and legal discovery requests.
Radio / Wireless Technology Service (Public Safety Wireless Division)	Manages the service delivery for wireless radio communications technologies.
IT Financial Service for Public Budget Formulation (Financial Service Team)	Manages the annual Citywide IT budget process for discretionary and non-discretionary IT allocations.
Digital Strategy Service (Digital Strategy Group)	Partners with City departments to develop innovative strategies to expand Citywide digital services and streamline applications through web and mobile channels.
GIS Service (GIS Team)	Provides core Citywide mapping and spatial analytics support for City's applications.

Data Center and Cloud Service (Atos)	Provides database and server management and the Cloud Data service.
Web Service (Web Team)	Manages and updates the City's public website (www.sandiego.gov), intranet site (CityNet) and SharePoint collaboration site, as well as tracks and reports web statistics for www.sandiego.gov and CityNet.
Service Management (Service Management Office)	Manages the City's end-user computer hardware and software standards, as well as manages the enterprise change management as one of the IT Governance gates.

Source: DoIT FY2021–FY2025 Strategic Plan.

IT Budget Summary for the Identified Services

According to DoIT, the department allocated the following amounts to support the identified services in FY2021. Addtionally, according to the FY2022 Non-Discretionary Budget in SAP, DoIT plans to allocate the listed amounts below to support the identified services in FY2022, as shown in **Exhibit 19** below.

Exhibit 19

Budget Summary of the Identified Services

Budget Summary	FY2021 (In Million)	FY2022 (In Million)
Help Desk Service	$13.7	$15.8
SAP Service	$27.8	$27.8
Network and Phone Service	$21.3	$20
Application Service	$13	$15
Cyber Security and eDiscovery Service	$4.9	$5.7
Radio Service	$10	$8.9
IT Financial Service	Not provided by DoIT	Not provided by DoIT
Digital Strategy Service	Not provided by DoIT	Not provided by DoIT
GIS Service	$4.4	$4.3
Data Center and Cloud Service	$16.6	$18.1
Web Service	$0.6	Included in the Application Service
Service Management Office	$13.7	Not provided by DoIT

Source: DoIT and FY2022 Non-Discretionary Budget in SAP.

Appendix B: Definition of Audit Recommendation Priorities

The Office of the City Auditor maintains a priority classification scheme for audit recommendations based on the importance of each recommendation to the City, as described in the table below. While the City Auditor is responsible for providing a priority classification for recommendations, it is the City Administration's responsibility to establish a target date to implement each recommendation, taking into consideration its priority. The City Auditor requests that target dates be included in the Administration's official response to the audit findings and recommendations.

Priority Class[13]	Description
1	Fraud or serious violations are being committed. Significant fiscal and/or equivalent non-fiscal losses are occurring. Costly and/or detrimental operational inefficiencies are taking place. A significant internal control weakness has been identified.
2	The potential for incurring significant fiscal and/or equivalent non-fiscal losses exists. The potential for costly and/or detrimental operational inefficiencies exists. The potential for strengthening or improving internal controls exists.
3	Operation or administrative process will be improved.

[13] The City Auditor is responsible for assigning audit recommendation priority class numbers. A recommendation that clearly fits the description for more than one priority class shall be assigned the higher priority.

Appendix C: Audit Objectives, Scope, and Methodology

Audit Objectives

In accordance with the Office of the City Auditor's Fiscal Year 2021 Audit Work Plan, we conducted a Performance Audit of IT Service Delivery Effectiveness. As stated in the Work Plan, the overall objective of the audit was to review the strengths and opportunities of the Department of Information Technology's (DoIT) Service Delivery from an internal customer's perspective.

As a result of our preliminary research and initial program assessment, we defined our audit scope to include the three objectives listed below:

- Objective 1: Identify the IT Services provided to internal customers, as well as the high-level processes and IT budget used to provide these services, to facilitate a survey of these services and to provide the context in which these services are provided.
- Objective 2: Design and conduct a survey of internal customers to measure the accessibility and reliability of these services; and
- Objective 3: Assess how well DoIT has defined its Key Performance Indicators (KPIs) to measure the effectiveness of each service.

Scope and Methodology

Methodology used to identify the IT Services provided by DoIT:

To identify the IT Services provided to internal customers, the high-level processes used to provide these services, and their cost to facilitate a survey of these services, we first identified IT Services provided by DoIT through reviewing DoIT's websites, strategic plans, and service level documentation. We further assessed and determined the service offering, service customer, service process, service budget, and potential finding(s) for each service through reviewing DoIT's documentation and interviewing DoIT staff.

Methodology used to design and conduct a survey to measure the accessibility and reliability of the identified services:

We first designed a survey to measure the accessibility and reliability of the identified services. We then conducted the survey of all City employees and collected the survey results. Lastly, we assessed the accessibility and reliability of the identified services based on the survey results.

Methodology used to assess if service measurement, reporting, and feedback mechanisms are well constructed:

To assess if service measurement, reporting, and feedback mechanisms are well constructed, we first assessed how well DoIT performed the service measurement and analysis of Key Performance Indicators (KPIs) based on the survey results. We further assessed if DoIT has mechanisms in place for reporting the relevant KPI metrics for all services.

Internal Controls Statement

Our internal controls testing was limited to specific controls relevant to our audit objectives, including the controls to identify the IT Services provided to internal customers, the high-level processes used to provide these services, and their cost to facilitate a survey of these services, the controls to design and conduct a survey to measure the accessibility and reliability of the identified services, and the monitoring controls over the service measurement, reporting, and feedback mechanisms.

Compliance Statement

We conducted this performance audit 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.

Appendix C: Overview of IT Services Included in The Survey

Service 1: Help Desk and Deskside Support

A help desk is a resource intended to provide the customer or end user with information and support related to an organization's products and services, such as computer problems, forgotten password, local computer application issues, etc. The purpose of the service desk practice is to capture demand for incident[14] resolution and service requests. It should also be the entry point and single point of contact for the service provider with all its users. Service desks provide a clear path for users to report issues, queries, and requests, and have them acknowledged, classified, owned, and actioned.

The Help Desk receives more than 60,000 calls for assistance annually. The City provides the following for Help Desk Service for the thousands of City employees who use the more than 15,000 devices in the City's inventory:

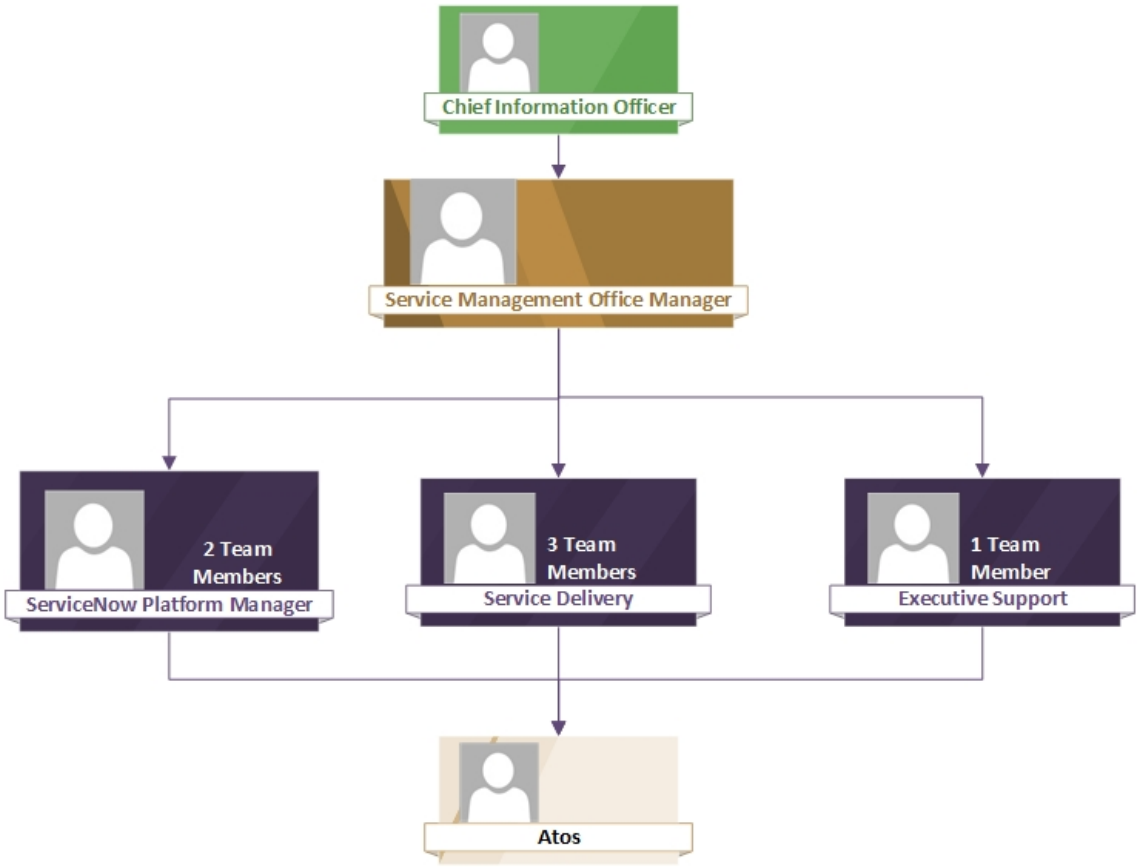
- Logs, resolves level 1 contacts, and escalates as required;
- Provides and maintains knowledge database; and
- Provides and utilizes self-help and support tools to resolve problems when feasible.

This service has been provided by Atos since 2012. It is monitored by the DoIT Service Management Office, as shown in **Exhibit 20** below.

[14] An unplanned interruption to a service or reduction in the quality of a service.

Exhibit 20

Org Chart of Help Desk and Deskside Support



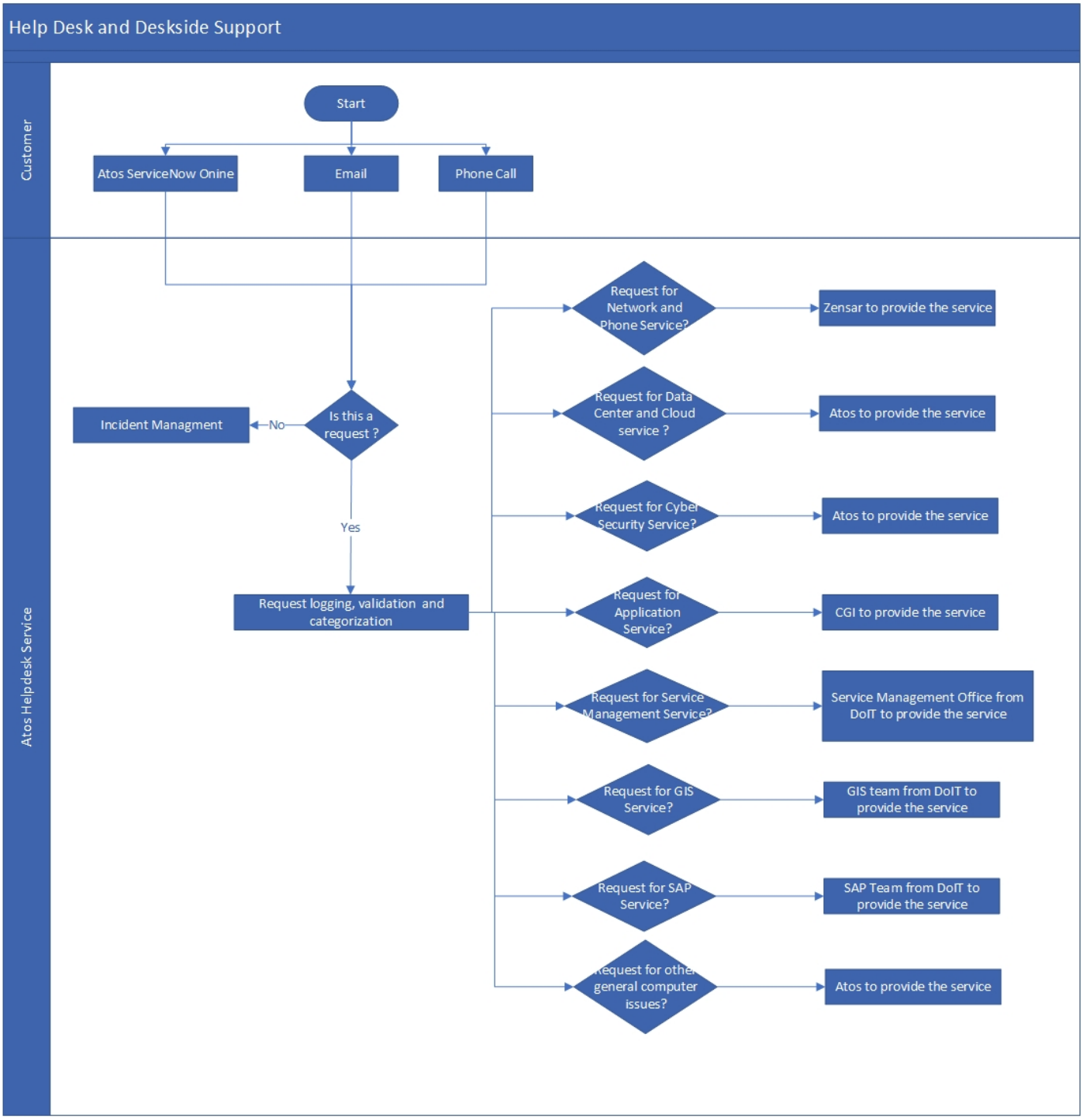
Source: Auditor generated based on DoIT Org Chart.

Help Desk and Deskside Service Process

Help Desk requests include service requests and incident requests. Users can obtain contact information for the Help Desk from the CityNet DoIT website, and request a service by calling, emailing, or submitting a request online through Atos ServiceNow, as shown in **Exhibit 21** below.

Exhibit 21

Help Desk and Deskside Support Process



Source: Auditor generated from the interviews with DoIT and the Service Process Analysis.

IT Budget for Help Desk and Deskside Support Service

According to DoIT, the department allocated $13.7 million to support Help Desk and Deskside Support Service in FY2021.

According to the FY2022 Non-Discretionary Budget in SAP, the department plans to allocate approximately $15.8 million to support Help Desk and Deskside Support Service in FY2022.

Survey Results for Help Desk Service

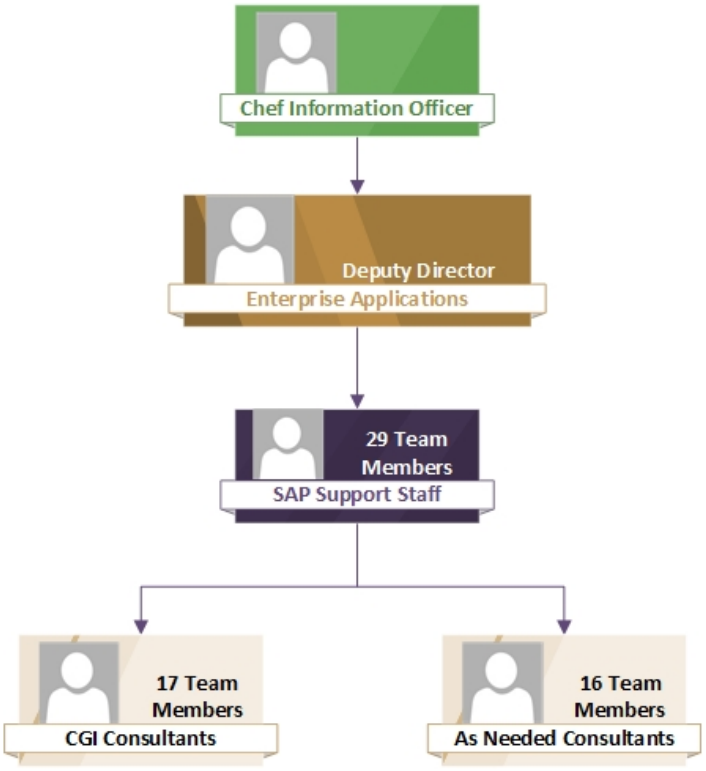
Users reported that they were generally satisfied with aspects of Help Desk Service. However, some users' issues were not always fully resolved and resolved in a reasonable time frame by Help Desk. Refer to the Help Desk Service section in **Audit Results** for more details.

Service 2: SAP Services

The City leverages its SAP system to automate significant portions of its centralized financials (receivables, payables, vendor management), purchasing and contracting, human resources, personnel management, water and sewer billing, major asset tracking, training, and other centralized core City processes. The City's Enterprise Applications division, shown in **Exhibit 22**, works to ensure that SAP is working to meet the City's business requirements in these areas.

Exhibit 22

IT Department Organizational Components Supporting SAP Services for the City



Source: Auditor generated based on DoIT Org Chart.

SAP Enterprise Resource Planning (ERP) Business Process Coordinators

Each City department uses specific function in SAP, as outlined in **Exhibit 23** below. Business Process Coordinators (BPCs) manage individual SAP modules and approve new module functionality. The SAP Team works with City departments to design, optimize, and execute critical business processes including City employee payroll, vendor and customer payments, Citywide budgeting, accounting, and financial transactions, and reporting and monitoring of budgeted expenditures and revenues, expediting

procurement of supplies and services, enterprise asset maintenance, and many other critical functions, by collaborating with BPCs for any technical system modifications, enhancements, or design changes.

Exhibit 23

SAP Function and Department Owner

SAP Function	End User (Department)
Finance **Accounts Payable/Vendor Invoice Management, Accounts Receivable, General Ledger, Asset Accounting, Contract Accounting, Accounting Structure, Project Systems, Treasury and Banking**	Department of Finance, City Treasurer
Public Sector Budgeting and Accounting **Funds Management, Grants Management, Public Budget Formulation**	Department of Finance
Procurement **Materials Management, Inventory Management, Ariba**	Purchasing and Contracting Department
Human Capital Management **Payroll, Time, Benefits, Organizational Management, Personnel Administration, Employee/Manager Self Service, SuccessFactors, Mobility, Business Objects Reporting**	Risk Management Department, Human Resources Department, Employee Learning & Development, Personnel Department
Enterprise Asset Management **Work Manager, Asset Management Planning**	Department of Information Technology, Transportation & Storm Water Department, Engineering & Capital Projects Department, Real Estate Assets Department, Environmental Services Department
Environmental Health and Safety	Public Utilities Department
Get It Done/Salesforce Integration	Performance and Analytics Department
OpenText Content Management	Department of Information Technology
Utilities	Public Utilities Department

Customer Relationship Management, MyWaterSD Mobile Application Governance Risk & Compliance	

Source: Auditor generated based on SAP Financials and Logistics documentation on CityNet.

DoIT's Enterprise Application division ensures that SAP is available for use, in addition to managing updates, upgrades, and process improvements to the various SAP components and supporting infrastructure. To request an upgrade or process improvement, the department that owns the specific function in SAP (e.g., the Department of Finance owns the accounts payable function) submits a demand to the Business Process Coordinator (BPC) for approval. These improvements then become a project that DoIT works with the department to complete based on the department's requirements.

Employees throughout the City use various portions of SAP in their roles and to manage their Citywide training records, timecard, payment, and tax information.

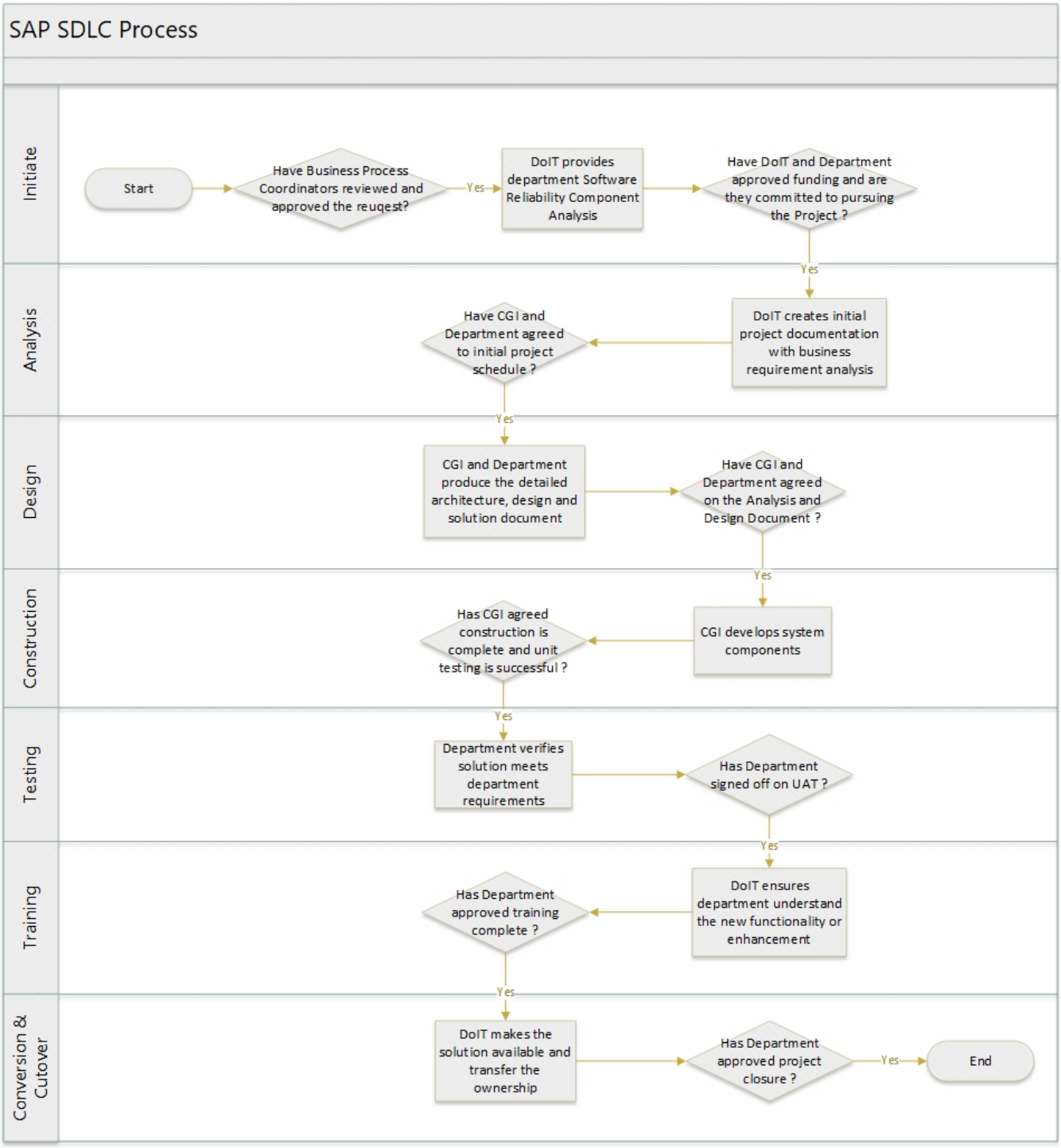
SAP Service Process

When Citywide SAP users run into challenges accessing SAP, or if the availability of the service is impacted, they can go to the SAP Portal on CityNet and click SAP help to get SAP questions answered or work with the Help Desk to address their individual access issues or help alert the SAP team to a wider outage event. This process is shown in **Exhibit 21** under the Help Desk and Deskside Support Service.

When departments would like to improve the design, optimize efficiency, or improve the execution of their business process of the system components they are responsible for, they contact the Business Process Coordinators (BPCs) who provide process and transaction training and help to determine if the issue requires further escalation. If the enhancement request is approved by the BPC, the SAP team from DoIT and CGI will follow the Citywide Systems Development Life Cycle (SDLC) process in **Exhibit 24** below for SAP enhancements, development, and deployment services.

Exhibit 24

SAP Enhancement/Improvement Process Overview



Source: Auditor generated based on CGI's Software Development Lifecycle process as applied to SAP.

IT Budget for SAP Service

According to DoIT, the department allocated $27.8 million in FY2021 to support the City's SAP services. This allocation includes contractual support costs outsourced to CGI, administrative expenses, DoIT department staff costs, data center costs, and other costs integrated into other budget items.

According to the FY2022 Non-Discretionary Budget in SAP, the department plans to allocate approximately $27.8 million to support SAP Service in FY2022.

Survey Results for SAP Service

Survey respondents were generally satisfied with aspects of SAP services. However, many users reported that they have been impacted by an SAP service outage that affected their department's business functions.

18 percent of respondents had been involved in an SAP system or process improvement/enhancement in the prior year; most of them were satisfied with this service.

44 percent of respondents had DoIT perform an improvement/enhancement on the SAP functions they use in the prior year. However, most users reported that they have not received training for new SAP functionalities or enhancements.

Refer to the SAP Service section in **Audit Results** for more details.

Service 3: Network and Phone Service

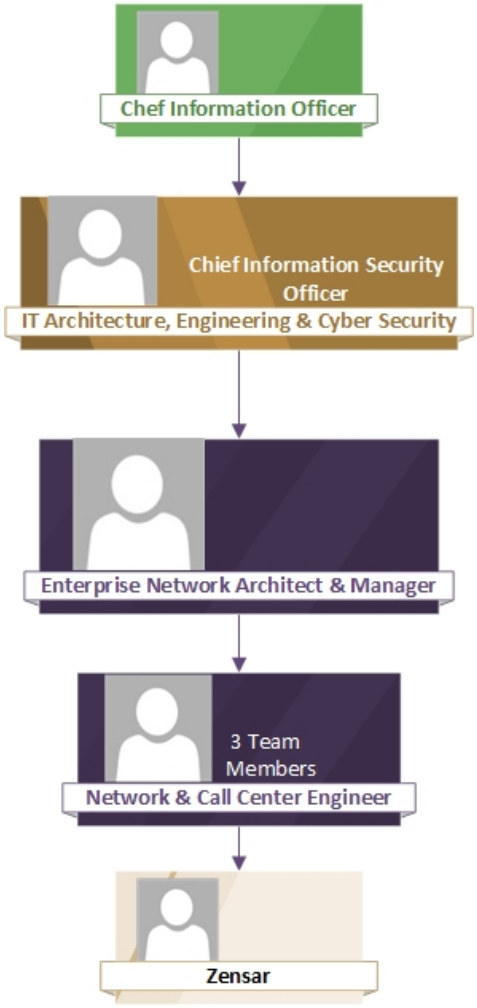
Network Services ensure that City employees can access City IT resources regardless of where they physically reside. This service is transparent to users unless it fails. Behind the scenes, the Network Services Team is adjusting bandwidth, ensuring connections, and ensuring there is enough capacity in the City's network to allow users to connect to City applications, perform research on the Internet, and stream services.

A network management service facilitates delivering business value to department users by maintaining and providing accurate information about the City's active network connections and utilization, allowing it to adjust its network bandwidth capacity. This service is provided to all City employees and includes internet, phone services, network, Wi-Fi, data circuits, WAN, LAN, VPN, and network infrastructure.

This service has been provided by Zensar Technologies since 2018. The City's Network Services Team provides oversight and direction for the managing and supporting of the current data/voice network systems and call center services, as shown in **Exhibit 25**.

Exhibit 25

IT Department Organizational Components Supporting Network and Phone Services for the City



Source: Auditor generated based on DoIT Org Chart.

Network and Phone Service Process

Users can report an issue with their network services through the Help Desk process outlined in **Exhibit 21**. Additionally, department contacts can request the following services by completing the request forms on CityNet:

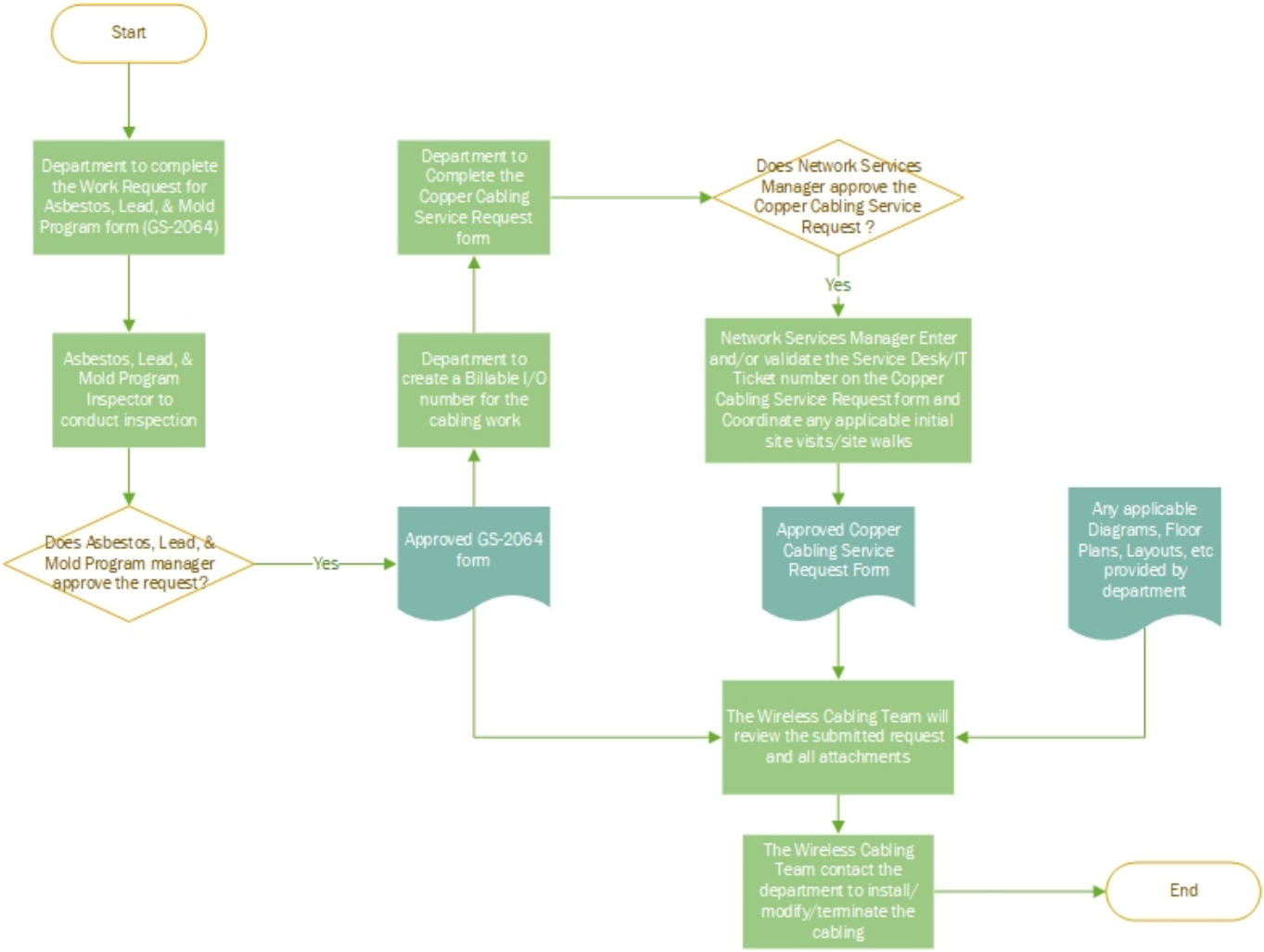
- End User Services
- Data Ports/Port Activation
- Wi-Fi
- Internet Access

- CIP (Critical Infrastructure Protection) Projects/Department Moves
- Firewall Service
- Cable Request

The cable request service process is outlined in **Exhibit 26**.

Exhibit 26

Cable Request Process Flowchart



Source: Auditor generated based on Cabling Request Procedure and Instructions from DoIT.

IT Budget for Network and Phone Service

According to DoIT, the department allocated $21.3 million to provide and support Network and Phone Service in FY2021,

According to the FY2022 Non-Discretionary Budget in SAP, the department plans to allocate approximately $20 million to support Network and Phone Service in FY2022.

Survey Results for Network and Phone Service

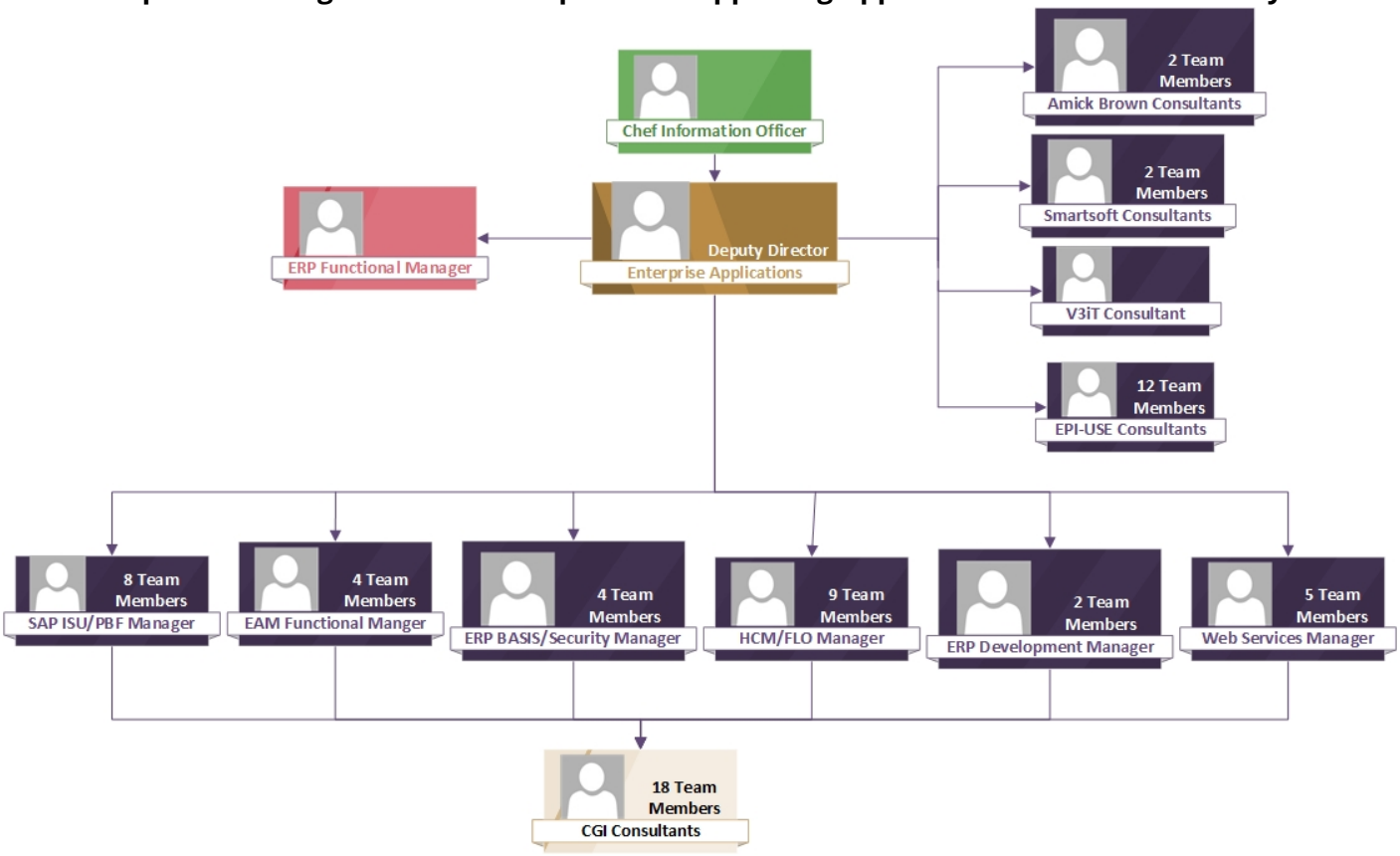
Survey respondents had an overall positive view of the connection, stability, and reliability of VPN. Some respondents' work performance was impacted after connecting to VPN while working remotely. Refer to the Network and Phone Service section in **Audit Results** for more details.

Service 4: Application Service

The application services of the City have been contracted to CGI, as shown in **Exhibit 27** below, since 2012 after the dissolution of the San Diego Data Processing Corporation. This service manages the development, maintenance, upgrades, applications, roadmaps, and support of over 300 City applications, including electronic payments, tax systems, emergency response systems, docketing systems, electronic permits, bid processing, golf systems, and all other City's operational systems and services to the public.

Exhibit 27

IT Department Organizational Components Supporting Application Services for the City



Source: Auditor generated based on DoIT Org Chart.

The City provides the following for application service to all City employees and the City's residents:

- Application support and maintenance, enhancements, development, and deployment services;
- Application rationalization/optimization services;

- Incident management, service request support;
- Third party vendor coordination and release support; and
- Logical database administration services.

Application Service Process

Users can report an issue with their application services through the Help Desk process outlined in **Exhibit 21**. Additionally, department contacts can request the other services listed above, such as application enhancements, development, and deployment services, which follow the process outlined in **Exhibit 28**.

Exhibit 28

CGI/SDLC Process Flowchart

CGI / SDLC Version 3.3

Legend: *Italics* - City owned item

	Initiate	Analysis	Design	Construction	Testing	Training	Conversion & Cutover
Overview Process	**Purpose:** Provide decision makers with SRCA to help them determine whether or not to proceed with the effort. **Decision Point –** DoIT and Client have approved funding and are committed to pursuing the Project.	**Purpose:** Produce project planning documents and review with stakeholders. Perform any analysis to ensure business requirements are complete. Initial project documentation is created. **Decision Point –** CGI and Client have agreed to initial project schedule.	**Purpose:** Produce the detailed architecture, design and solution documents for the construction, integration and testing. **Decision Point –** CGI and City have agreed on the Analysis and Design Document (ADD).	**Purpose:** Develop system components as outlined in the architectural design documentation and provide verified test results. **Decision Point –** CGI agrees that construction is complete and unit testing is successful.	**Purpose:** Verify solution meets client requirements. Demonstrate that the solution meets all client acceptance criteria. **Decision Point –** Client signs off on UAT.	**Purpose:** Ensure the client understands the new functionality or enhancement. **Decision Point –** Client approves training complete.	**Purpose:** Make the solution available to the client and ensure they can assume ownership. **Decision Point –** Client approves project closure.
	Demand Approval	Planning Gate Approval	Design Review Approval	Internal Quality Approval	Client Quality Approval		Final Client Acceptance

Outputs	• SRCA
	• Quote
		• *Purchase Order*
		• Project Information:
		  ○ Overview Schedule
		  ○ Comm. Plan
		  ○ Risk Register
		  ○ RACI
		• Atos requests
			• Architectural Design Documentation
			• Architecture & Design Reviews performed
			• Baselined Schedule
				• Test Plan
				• IST Scripts
				• *UAT Scripts*
				• IST Test Results
				• Issues Tracker
				• Training Plan – if required
					• *UAT Test Results*
					• UAT Issue Tracker
					• For PCI related projects: Vulnerability Assessment including a ASV Scan
						• Training Materials – if included in scope
						• Go/No-go meeting with Client
							• Tech Review Form
							• Cutover Plan
							• CGI Wiki Completion
							• Service Desk Wiki
							• *Client Requirements Survey*
							• Client PIR
							• Training Feedback Survey – If required

Action Items	• *Project summary, scope, and budget* • *Identify Stakeholders* • *Identify business requirements* • Provide SRCA • Provide quote if necessary	• Confirm Stakeholders • Resource Allocation • DoIT Planning Gate review meeting	• Deliver ADD and LOE • Finalize budget • Attend CGI architecture review • Attend City Design review, if necessary • Request Project Plan Approval in ServiceNow	• Perform work identified to achieve requirements in ADD • Develop test scripts • Execute Unit testing • Execute IST test scripts • Conduct code reviews	• Perform UAT kickoff • Conduct UAT Training – If required • *Execute UAT test scripts* • Request UAT approval in SNOW once UAT complete	• Deliver training material or conduct training as outlined in scope • Submit change record for ECM	• Complete project plan • Send application wiki updates to Service Desk • Send project closeout email to project stakeholders • Complete transition to Ops Support • Change Review

Source: DoIT.

IT Budget for Application Service

According to DoIT, the department allocated $13 million to support Application Service in FY2021.

According to the FY2022 Non-Discretionary Budget in SAP, the department plans to allocate approximately $15 million to support Application Service in FY2022.

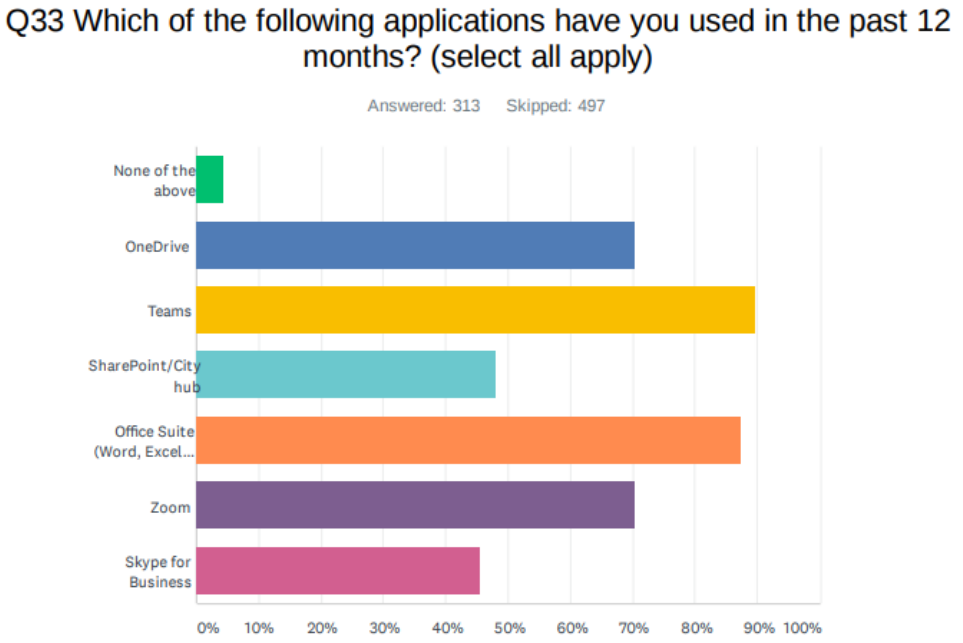
Survey Results for Application Service

The survey results indicated that more than 95 percent of respondents used remote work applications in the prior year, as shown in **Exhibit 29**. Respondents were very satisfied with the reliability of the remote work applications used while working remotely.

Additionally, close to 20 percent of respondents reported that they had been involved in a system (non-SAP) implementation or process improvement/enhancement of applications; the majority of them were satisfied with the application implementation or enhancement process.

Exhibit 29

Utilization of Remote Work Application



ANSWER CHOICES	RESPONSES	
None of the above	4.47%	14
OneDrive	70.29%	220
Teams	89.46%	280
SharePoint/Cityhub	47.92%	150
Office Suite (Word, Excel, PowerPoint, etc.)	87.22%	273
Zoom	70.29%	220
Skype for Business	45.37%	142
Total Respondents: 313		

Source: OCA Citywide IT Service Delivery Survey results.

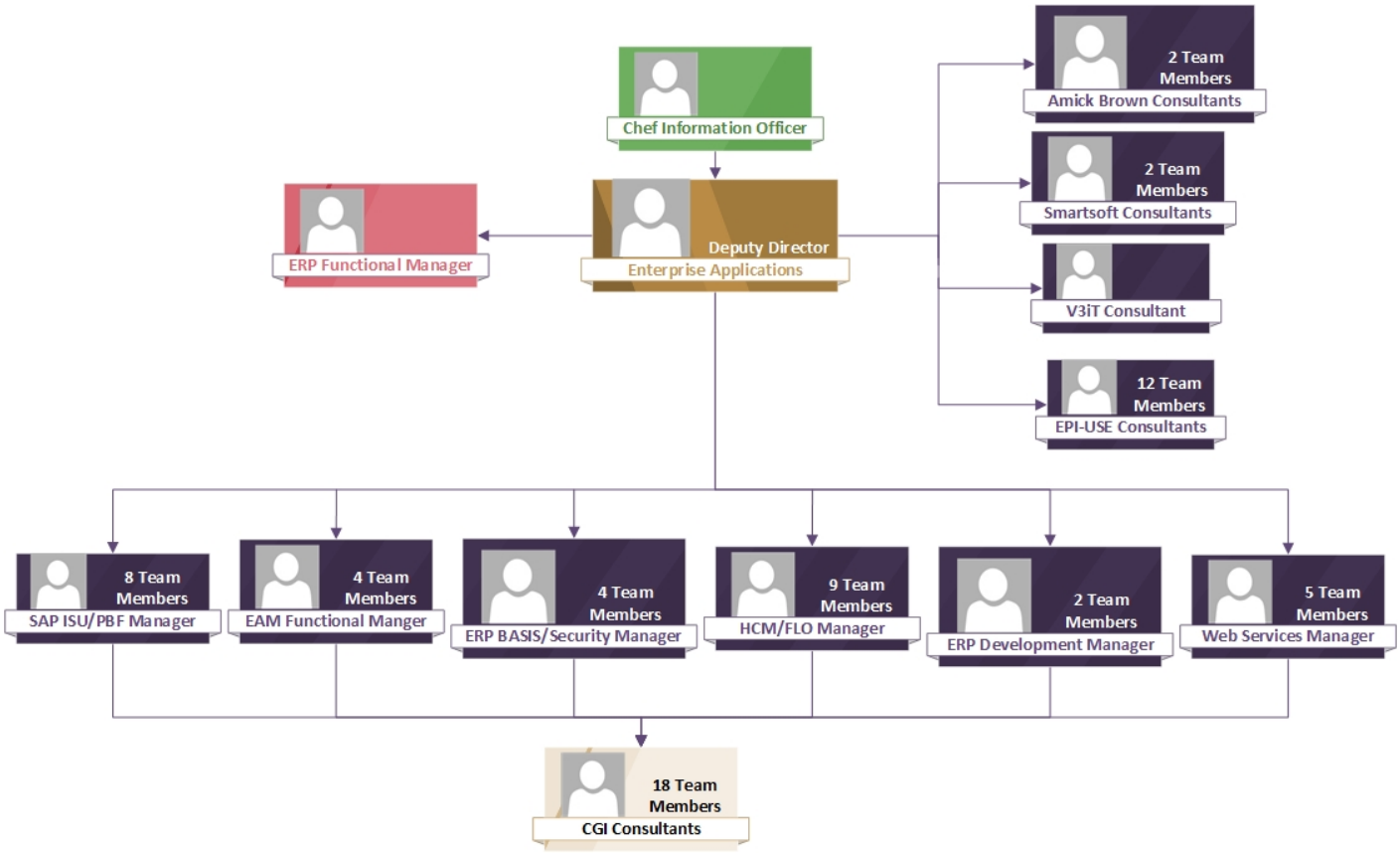
Service 5: Cyber Security Service

Cyber Security Service is the service for defending computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks. Cyber Security applies in a variety of contexts, from business to mobile computing, and can be divided into Network Security, Application Security, Information Security, Operational Security, Disaster Recovery and Business Continuity, and End-User Education.

The City's Cyber Security Team (shown in **Exhibit 30** below) protects every aspect of the City's Network and IT system 24/7. The Cyber Security Team, along with City employees and contractors, is responsible for maintaining the security of the City's IT systems.

Exhibit 30

IT Department Organizational Components Supporting Application Services for the City



Source: Auditor generated based on DoIT Org Chart.

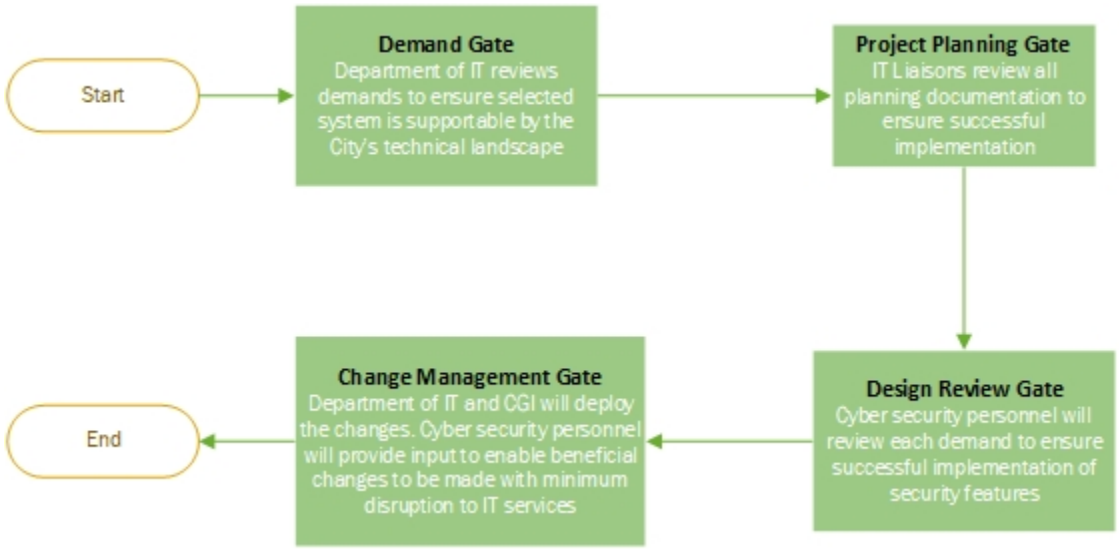
The Cyber Security Team protects the City's data and technology and manages the business risk of City IT operations. Additionally, it provides the development, implementation, and management of all Citywide information security policies, standards, procedures, and internal controls, to all City employees.

Cyber Security Service Process

Users can report suspicious emails by emailing the Cyber Security Team or by calling the City Help Desk. The Help Desk Service process is outlined in **Exhibit 21**. Department users can request other Cyber Security services such as Information System Procurement Review and Approval, Account Creation or Modification, or Mobile Device Incidents Requiring Security Team Interaction. The Information System Procurement Review and Approval process is highlighted in **Exhibit 31**.

Exhibit 31

Procurement of Technology Solutions Process



Source: Auditor generated based on Procurement of Technology Solutions Guidance.

IT Budget for Cyber Security Service

According to DoIT, the department allocated $4.9 million to support Cyber Security Service in FY2021.

According to the FY2022 Non-Discretionary Budget in SAP, the department plans to allocate approximately $5.7 million to support Cyber Security Service in FY2022.

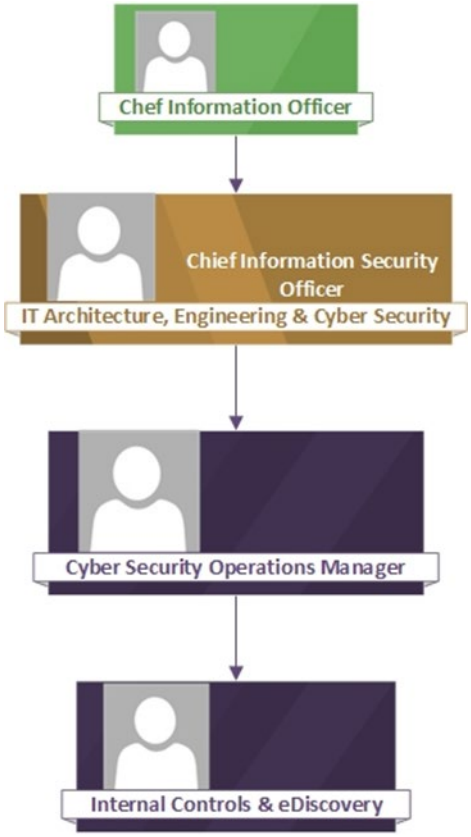
eDiscovery Service

In conjunction with the Cyber Security Team, the eDiscovery Team (as shown in **Exhibit 32** below) manages electronic discovery searches for California Public Records Act (PRA) requests, investigations, subpoenas, and legal discovery requests.

eDiscovery Service is provided to all City departments throughout the City. More than 6 million emails are reviewed and returned by the eDiscovery Team per year through this process.

Exhibit 32

IT Department Organizational Components Supporting eDiscovery Services for the City



Source: Auditor generated based on DoIT Org Chart.

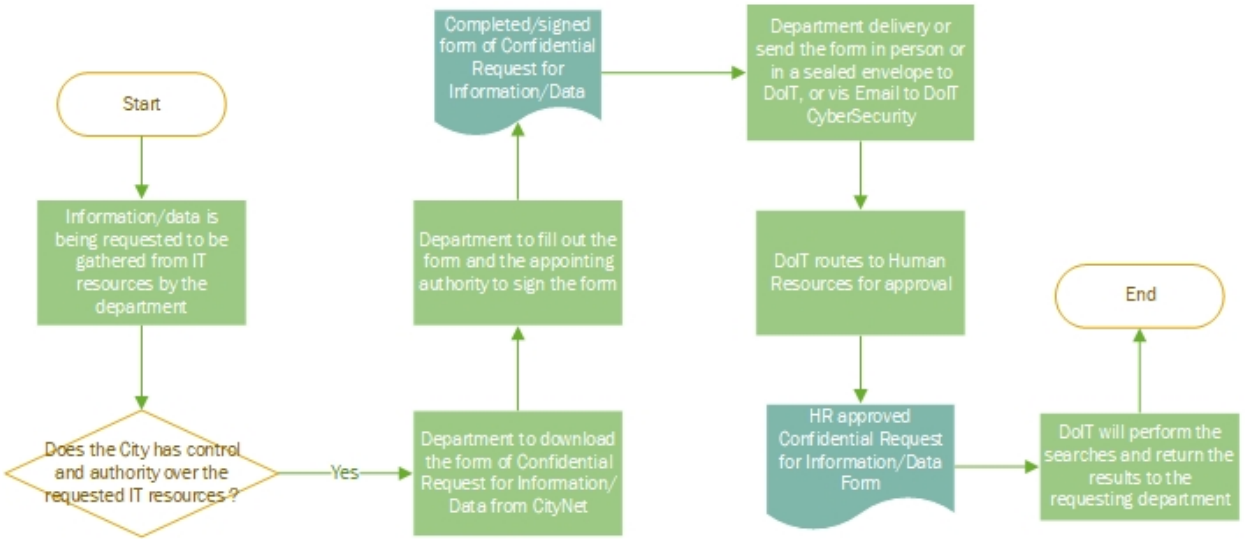
eDiscovery Service Process

Departments can request eDiscovery through a form on CityNet for Confidential Request for Information/Data for Internal Investigations. This form can be delivered to DoIT in person or can be emailed to the Cyber Security Team. DoIT will perform

the searches and return the results to the requesting department. The process is outlined in **Exhibit 33**.

Exhibit 33

eDiscovery Service Process Flowchart



Source: Instructions from Confidential Request for Information/Data for Internal Investigations form.

Survey Results for Cyber Security and eDiscovery Services

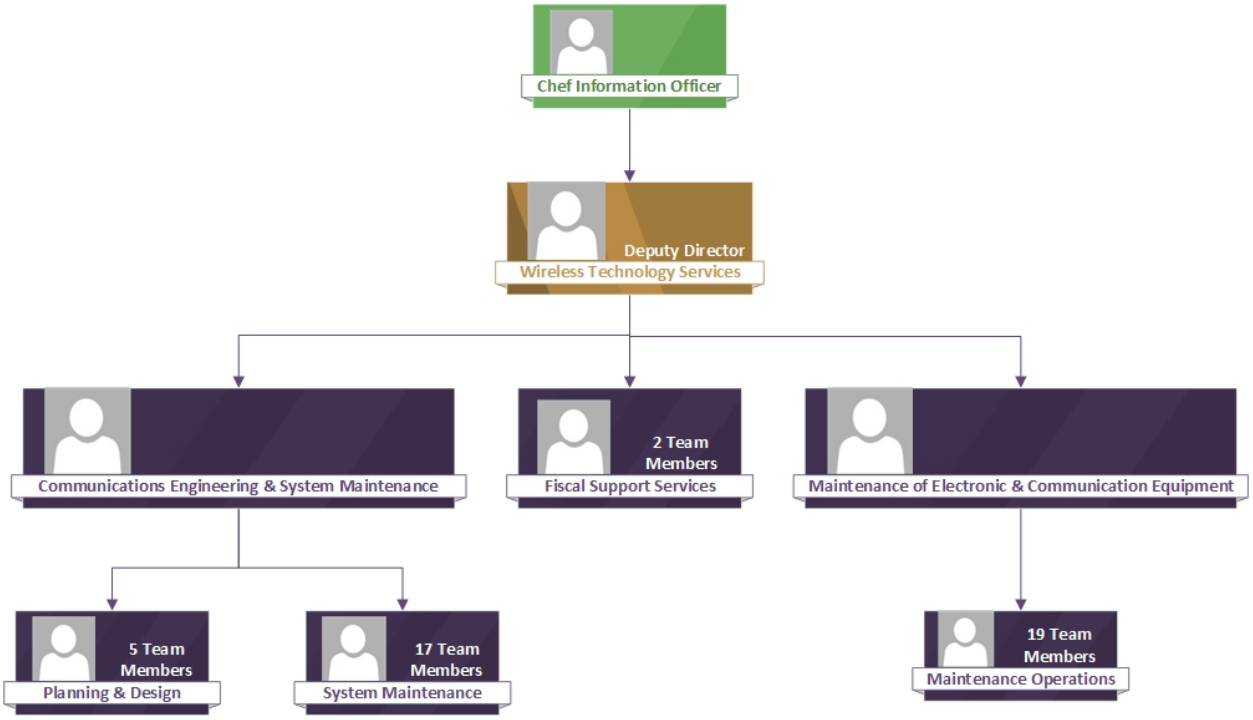
Approximately 26 percent of survey respondents used Cyber Security or eDiscovery Services in the prior year. The majority of them were satisfied with the Cyber Security Service, which includes information system procurement review and approval service, provisioning/deprovisioning service, and service for mobile device incidents. Half of respondents who utilized the eDiscovery Service reported that the service is somewhat accessible and easy to use and another half reported that the service is very accessible and easy to use.

Service 6: Radio/ Wireless Technology Service

The Radio Service (Wireless Technology Service) division provides radio services to all City departments, including first responders in the Police and Fire-Rescue Departments and supports 22 radio sites along with mountain-top towers in San Diego County. The division also installs radio equipment in public-safety and other City vehicles. The Wireless Technology Services Group, shown in **Exhibit 34**, manages the service delivery for wireless radio communications technologies.

Exhibit 34

IT Department Organizational Components Supporting Radio Services for the City



Source: Auditor generated based on DoIT Org Chart.

The City provides the following for radio services to all City Departments and City residents:

- Wireless Radio/Communication Systems Engineering
- Radio System Maintenance (Mountain-Top Infrastructure)
- Dispatch Center Support
- Radio Maintenance Operations

- Radio Provisioning/Programming
- Radio Installations

Radio/Wireless Technology Service Process

The user can create service requests for the services listed above, including wireless cabling projects, by selecting the SafetyNet Radio Service Request tile (SAP Fiori) and filling out the customer service request form in SAP. The process is outlined in **Exhibit 26,** which is part of the Network Service on **page 51**. The City Network Services Manager's Office will engage Wireless Services personnel to perform copper cabling work after it has been fully approved by the City Network Services Manager's Office.

IT Budget for Radio/ Wireless Technology Service

According to FY2021 DoIT Adopted Budget, the department allocated approximately $10 million to support Radio Service in FY2021.

According to the FY2022 Non-Discretionary Budget in SAP, the department plans to allocate approximately $8.9 million to support Radio Service in FY2022.

Survey Results for Radio/ Wireless Technology Service

Approximately 8 percent of survey respondents used Radio/Wireless Technology Service in the prior year, 25 percent of which had been impacted by a radio service failure in the prior year. Of those that experienced a radio service failure, 86 percent experienced moderate or severe impacts, and 50 percent experienced impact to the department's vital business functions more than a few times over the year, as shown in **Exhibit 35** and **Exhibit 36**.

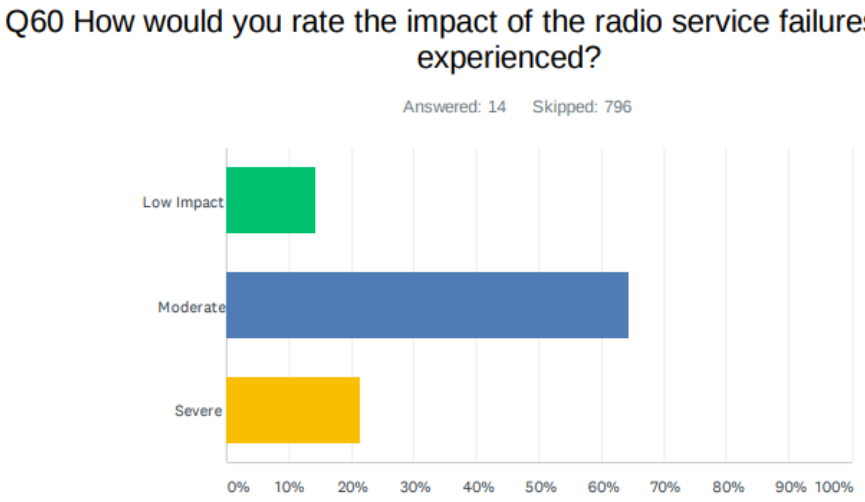
Our survey results show that respondents were generally satisfied with the following experience when using remote device communications (e.g., water pumps, etc.) and handheld radio devices or vehicle-based radio devices in the prior year:

- Radio System Availability
- Radio System Maintenance
- Radio Service Coverage
- Communication Quality
- Radio system's ability to recover from failures or losses

Additionally, many respondents gave the Wireless Technology Team high marks for their implementation service.

Exhibit 35

Impact of Radio Service Failures

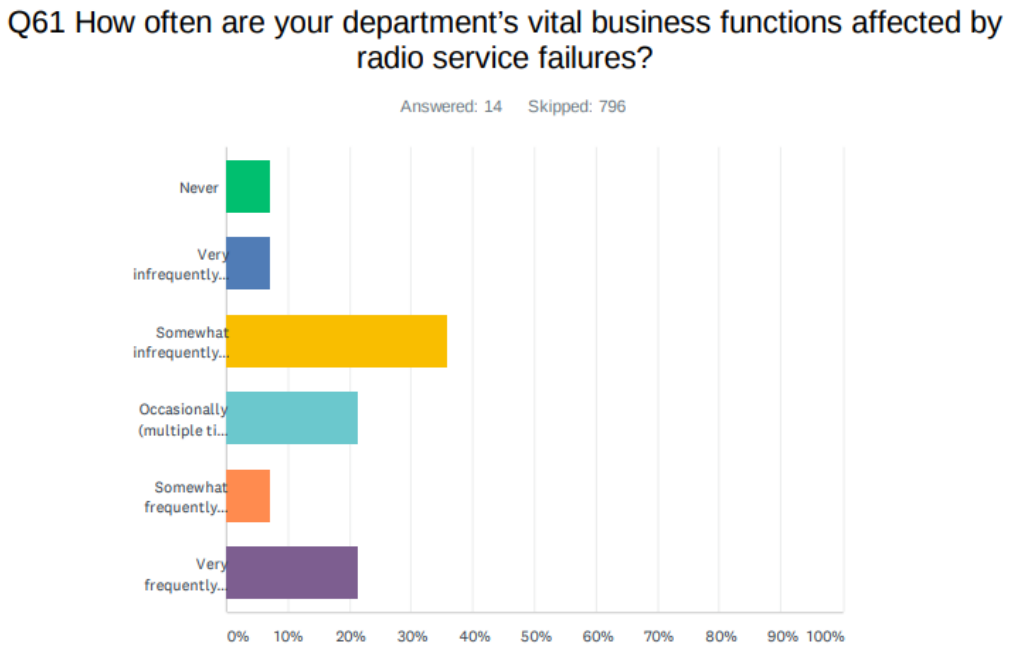


ANSWER CHOICES	RESPONSES	
Low Impact	14.29%	2
Moderate	64.29%	9
Severe	21.43%	3
TOTAL		14

Source: OCA Citywide IT Service Delivery Survey results.

Exhibit 36

Business Impact of Radio Service Failures



ANSWER CHOICES	RESPONSES	
Never	7.14%	1
Very infrequently (once a year)	7.14%	1
Somewhat infrequently (a few times a year)	35.71%	5
Occasionally (multiple times a year)	21.43%	3
Somewhat frequently (once a month)	7.14%	1
Very frequently (multiple times a month)	21.43%	3
TOTAL		14

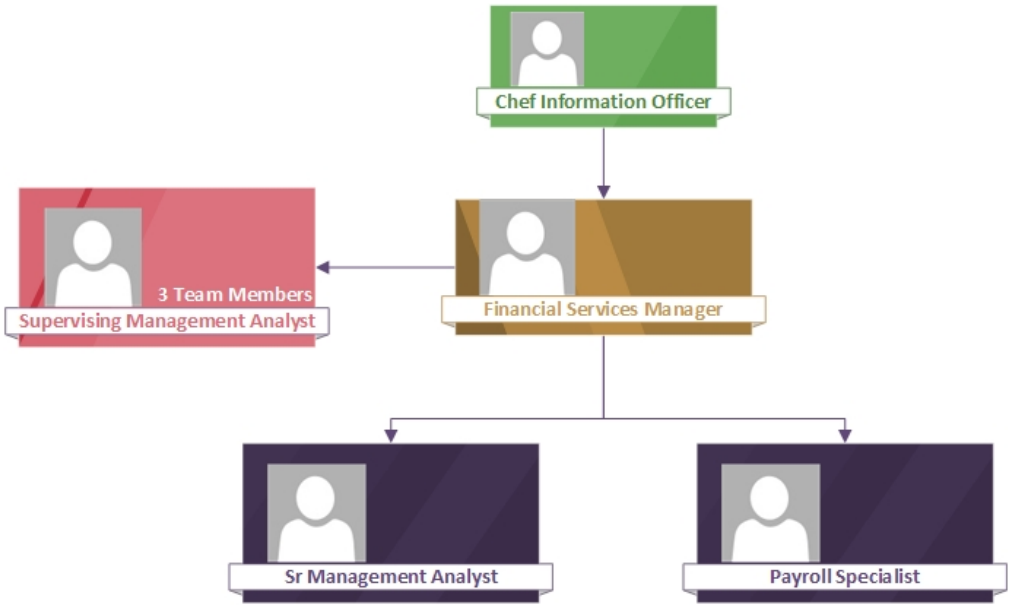
Source: OCA Citywide IT Service Delivery Survey results.

Service 7: IT Financial Services

The IT Financial Service Team, as shown in **Exhibit 37** below, works with the Department of Finance to manage the annual Citywide IT budget process and allocations. The team also monitors and reports on Citywide IT expenditures, department payroll operations, personnel documents, invoices, and purchase requisitions.

Exhibit 37

IT Department Organizational Components Supporting Financial Services for the City



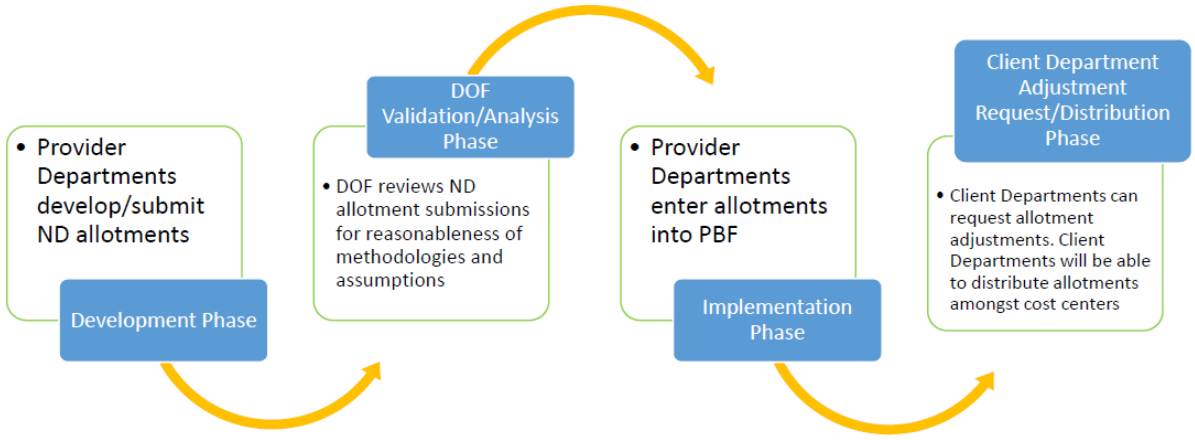
Source: Auditor generated based on DoIT Org Chart.

IT Budget Service Process

After FY2021early 2021, Public Budget Formulation (PBF) from SAP is the tool used for IT Budget Service. Only the City employees who are responsible for budget review and updates from departments have access to the PBF tool and can submit IT budget in SAP. The budget process is outlined in **Exhibit 38**.

Exhibit 38

Non-Discretionary Budget Process



Source: Auditor generated based on FY2022 Non-Discretionary Provider Department Training.

Survey Results for IT Financial Service

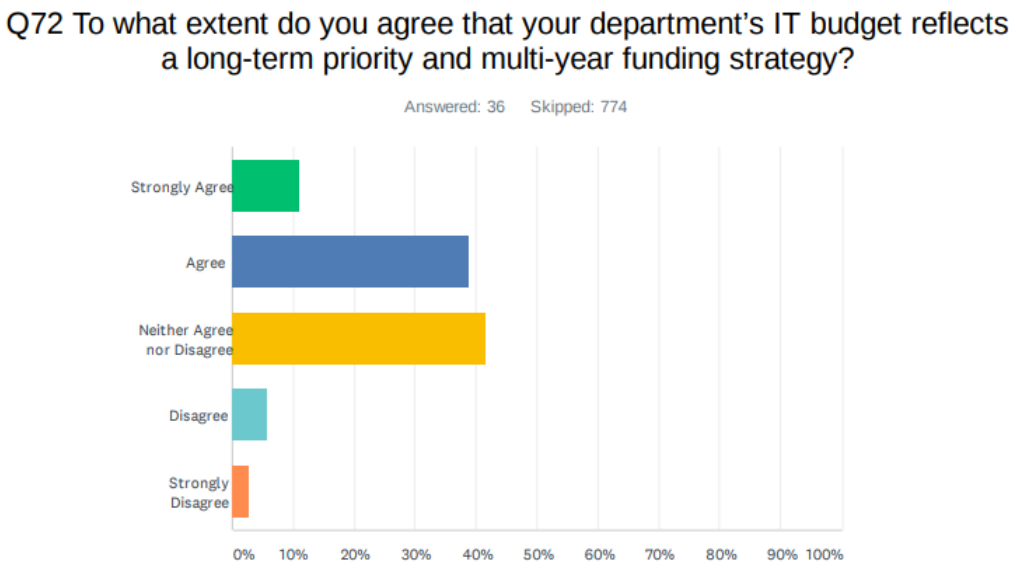
Approximately 7 percent of survey respondents used IT Financial Service for Public Budget Formulation (PBF) in the prior 12 months, 78 percent of which were responsible for budget review and updates for their departments. Among those users, 31 percent said that their departments' IT Non-Discretionary allocation fluctuated a great deal year to year.

Approximately 42 percent of our respondents neither agree nor disagree that their departments' IT budget reflects a long-term priority and multi-year funding strategy, while 8 percent disagree or strongly disagree, as shown in **Exhibit 39**.

Approximately half of our respondents for the IT Financial service found the IT budget process to be transparent, while 36 percent were neutral, and 12 percent found it not transparent. Refer to the IT Financial Service section in **Audit Results** for more details.

Exhibit 39

Customer Experience on Department's IT Budget Service



ANSWER CHOICES	RESPONSES	
Strongly Agree	11.11%	4
Agree	38.89%	14
Neither Agree nor Disagree	41.67%	15
Disagree	5.56%	2
Strongly Disagree	2.78%	1
TOTAL		36

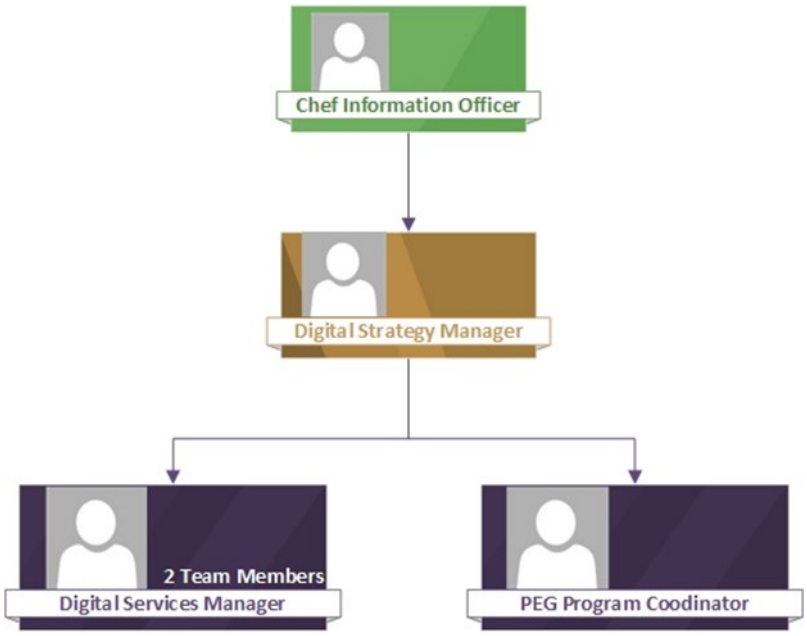
Source: OCA Citywide IT Service Delivery Survey results.

Service 8: Digital Strategy Service

Digital Strategy is the application of digital technologies to business models to form new differentiating business capabilities. The Digital Strategy Division, shown in **Exhibit 40**, partners with City departments to develop innovative strategies to expand Citywide digital services, streamline applications through web and mobile channels, and oversee the use of Public, Education, and Government (PEG) fees to deploy state-of-the-art technologies for public access to cable television broadcasts to ensure these new technologies align with the City's Digital Strategy.

Exhibit 40

IT Department Organizational Components Supporting Digital Strategy Services for the City



Source: Auditor generated based on DoIT Org Chart.

The Digital Strategy Service includes working with departments to determine which applications would provide the necessary features to efficiently meet their current and future operational needs. The Digital Strategy Team accomplishes this through:

- Helping guide teams through new IT projects to ensure their alignment with the City's digital strategy;
- Assisting with research for choosing products or services that will meet IT needs;

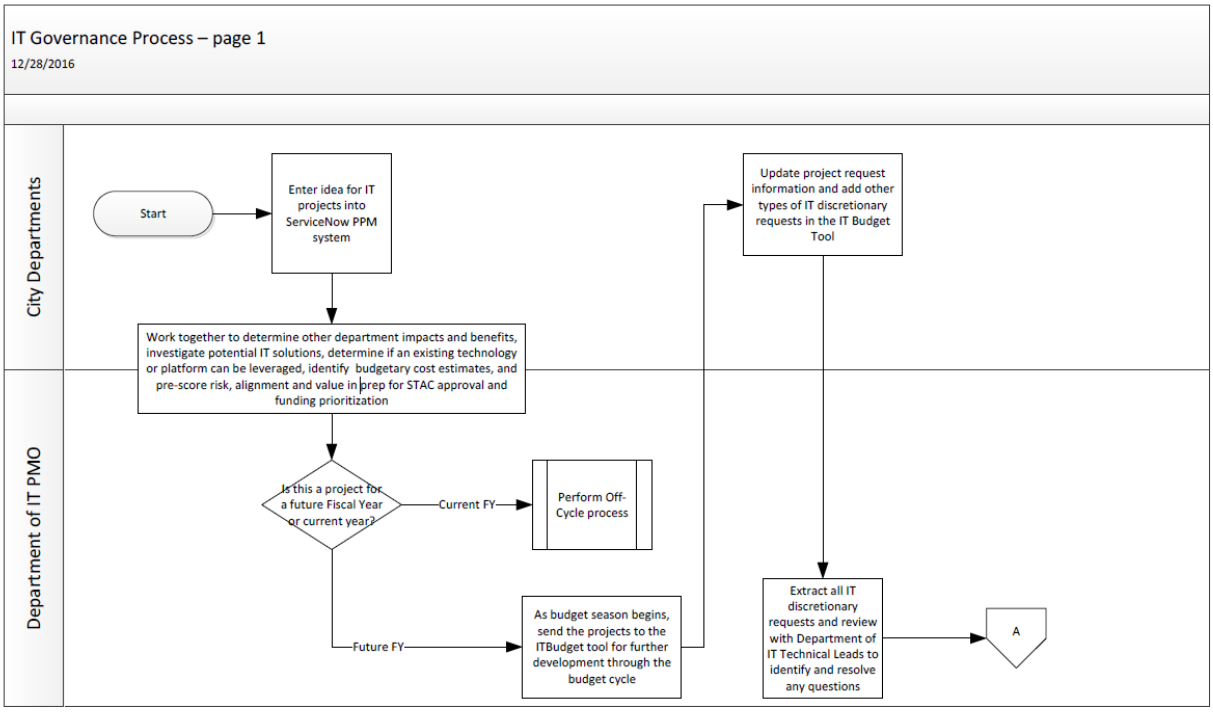
- Increasing information sharing between departments to achieve cost savings and find efficiencies;
- Supporting the coordination of multi-departmental projects;
- Providing assistance to ensure smooth planning and implementation processes;
- Updating CityNet to create easy-to-navigate pages to request services and find training guides; and
- Working closely with partner organizations to increase training opportunities for Microsoft products, such as Excel, PowerPoint, and Word.

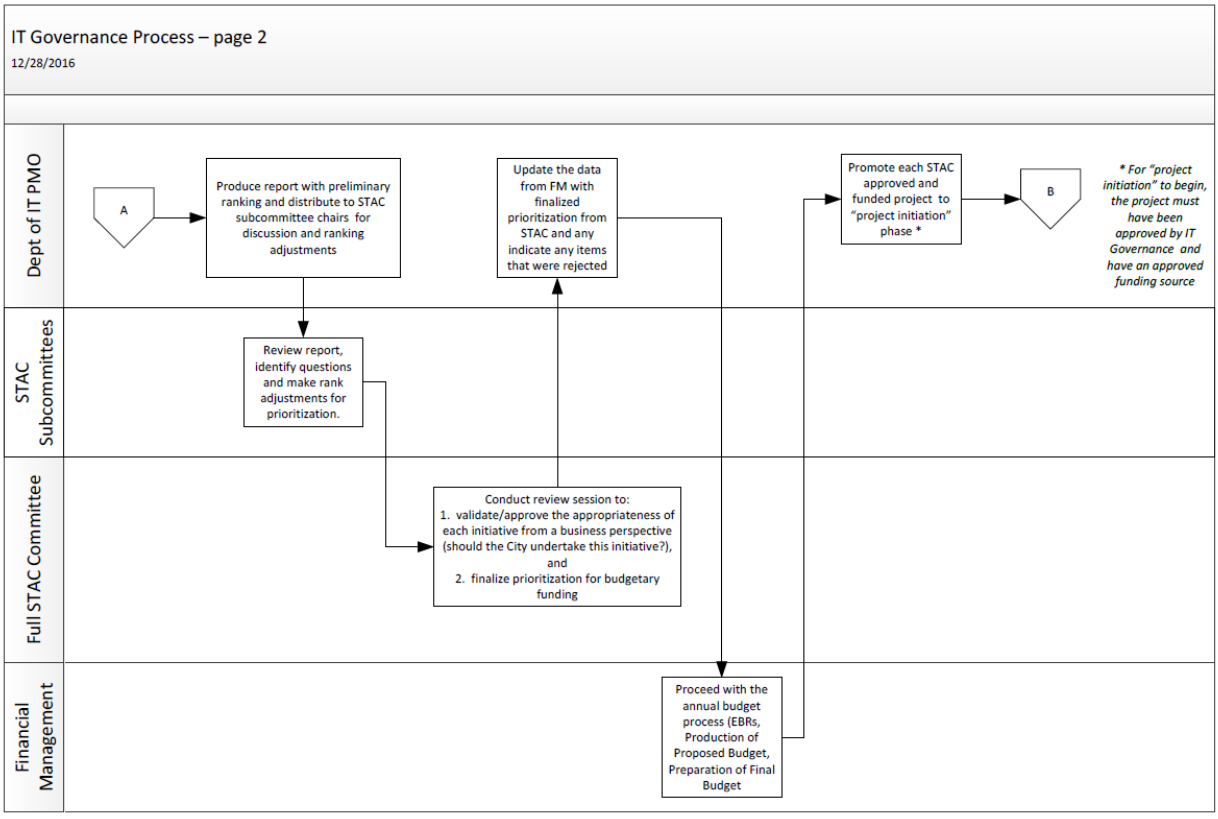
Digital Strategy Service Process

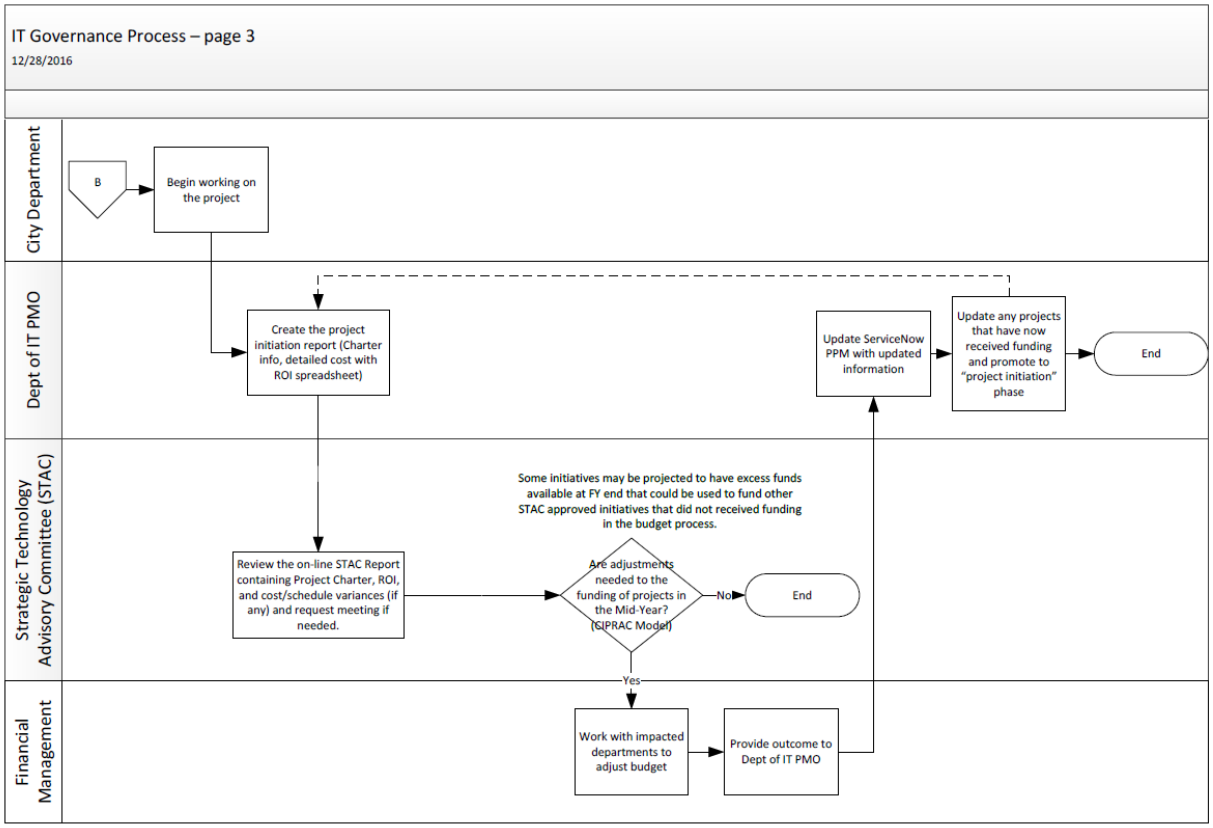
Users can contact the Digital Strategy Team from the IT Governance & Portfolio Management portal on CityNet for any Digital Strategy Service request. The Digital Strategy Services Team is responsible for governance of new demands, projects, and procurement of technology throughout the City in order to promote efficiency and strategic alignment with the City's technology plan. The process for IT governance is outlined in **Exhibit 41**.

Exhibit 41

IT Governance Process







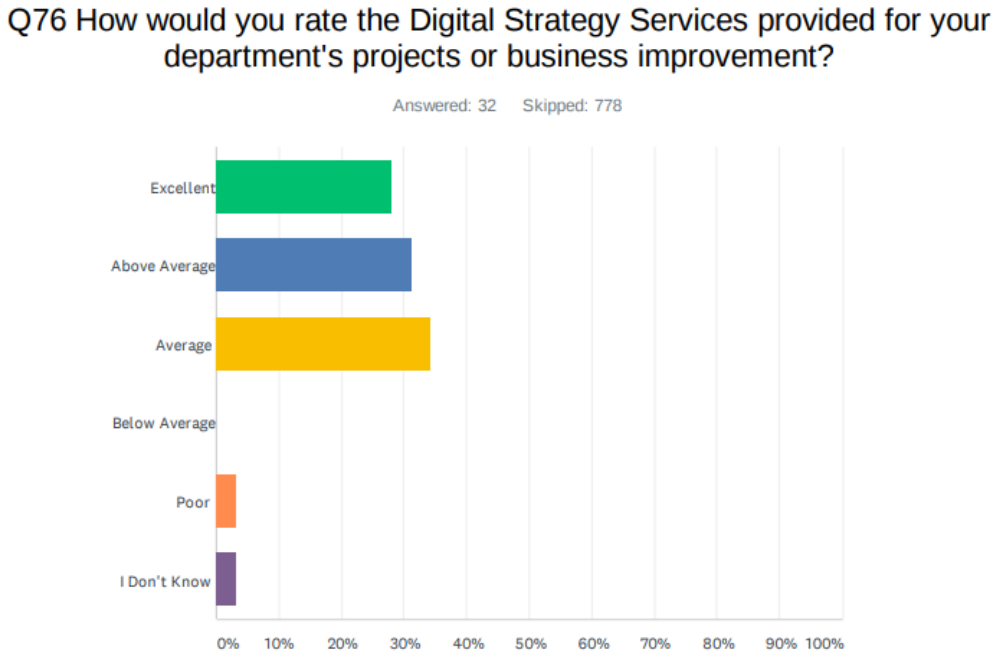
Source: DoIT FY2021–FY2025 Strategic Plan.

Survey Results for Digital Strategy Service

Approximately 5 percent of survey respondents used Digital Strategy Service in the prior 12 months. A majority of respondents gave Digital Strategy team high marks for their projects or business improvement service, as shown in **Exhibit 42**.

Exhibit 42

Digital Strategy Service Provided for Department's Projects or Business Improvement



ANSWER CHOICES	RESPONSES	
Excellent	28.13%	9
Above Average	31.25%	10
Average	34.38%	11
Below Average	0.00%	0
Poor	3.13%	1
I Don't Know	3.13%	1
TOTAL		32

Source: OCA Citywide IT Service Delivery Survey results.

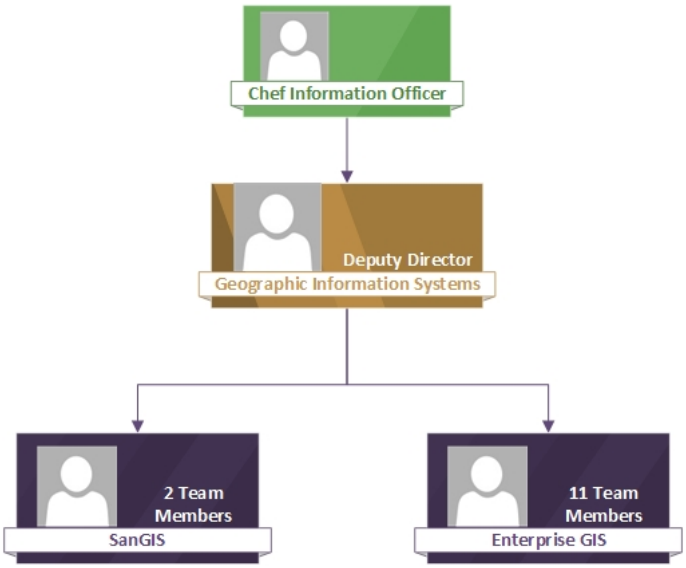
Service 9: GIS Service

A geographic information system (GIS) is a computer system for capturing, storing, checking, and displaying data related to positions on Earth's surface. By relating seemingly unrelated data, GIS can help individuals and organizations better understand spatial patterns and relationships. With GIS technology, people can compare the locations of different things in order to discover how they relate to each other. For example, using GIS, a single map could include sites that produce pollution, such as factories, and sites that are sensitive to pollution, such as wetlands and rivers. Such a map would help people determine where water supplies are most at risk.

The City's GIS Service Team, as shown in **Exhibit 43** below, provides core Citywide mapping and spatial analytics support for many of the City's 380 applications.

Exhibit 43

IT Department Organizational Components Supporting GIS Services for the City



Source: Auditor generated based on DoIT Org Chart.

The GIS Service Team provides the following GIS Services to all City employees:

- Manages the City's Enterprise GIS Budget
- Administers Esri ArcGIS Online and Maintain Accounts
- Assists with GIS Workflow Documentation

- Performs Spatial Analysis, Modeling and Geostatistics
- Creates Custom Maps
- Coordinates Esri Instructor-Led Training
- Configures Esri Web and Mobile Apps, including Collector for ArcGIS, Survey123, StoryMaps and Dashboards

GIS Service Process

Users can request GIS Service through Help Desk, as outlined in **Exhibit 21**, for issues related to service availability, such as the following:

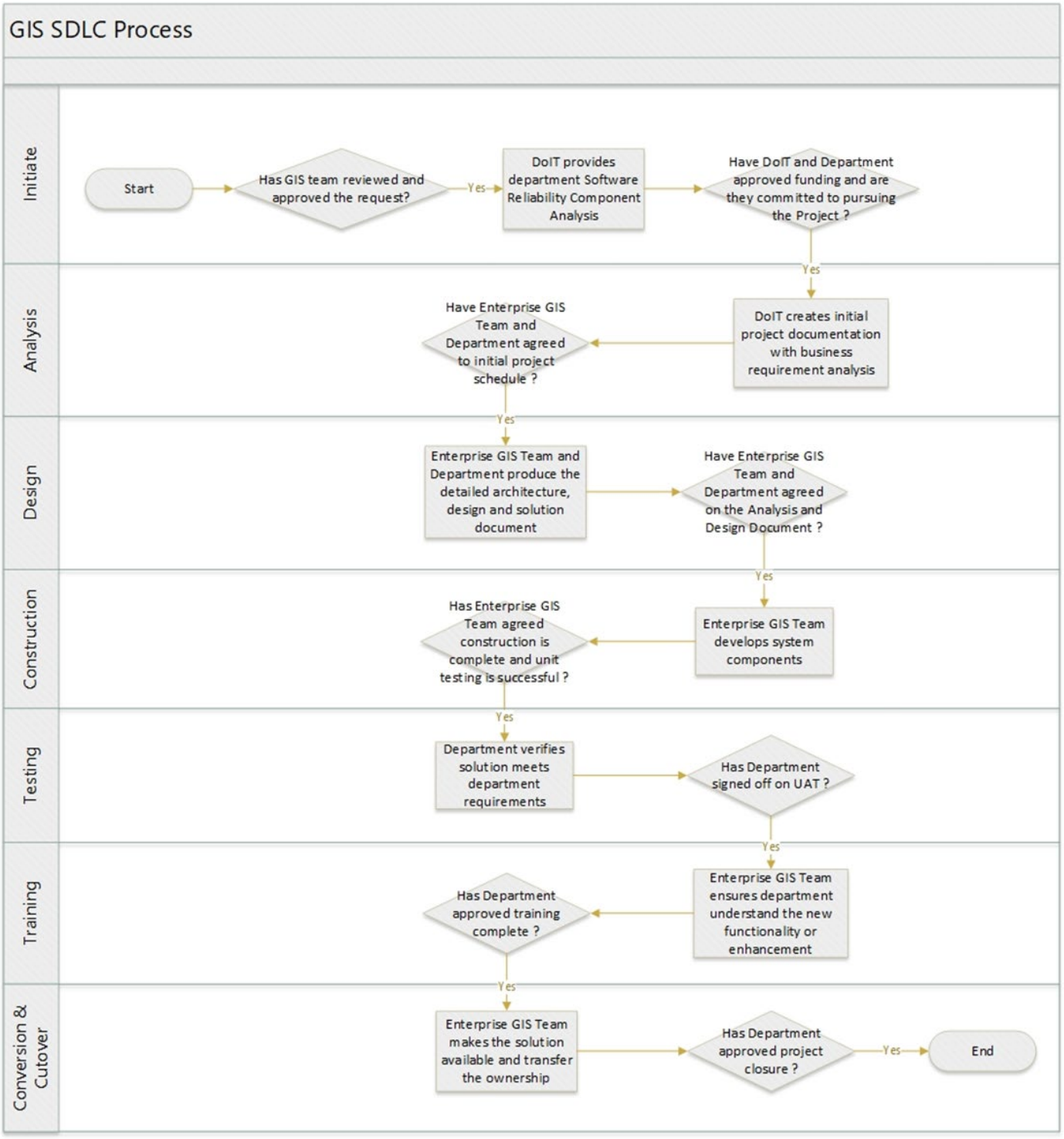
- City hosted REST Services are down and fail to load in ArcGIS Desktop or ArcGIS Online;
- ArcMap is unable to connect to the license manager;
- Feature classes are missing or within the wrong location within Atlas, the City's Enterprise Spatial Data Warehouse (SDW); and
- Atlas is unreachable by existing users (i.e., members of the SDEViewer AD group).

The service requests will be routed to the Enterprise GIS ServiceNow queue for approval.

Additionally, GIS application service requests are for activities involving installs, moves, changes, and additions to the GIS Enterprise environment, which follows the City's Software Development Life Cycle (SDLC) process shown in **Exhibit 44** below.

Exhibit 44

GIS Software Development Life Cycle (SDLC) Process Flowchart



Source: Auditor generated based on CGI's Software Development Lifecycle process as applied to GIS.

IT Budget for GIS Service

According to the FY2021 DoIT Adopted Budget, the department allocated approximately $4.4 million to support GIS Service in FY2021.

According to the FY2022 Non-Discretionary Budget in SAP, the department plans to allocate approximately $4.3 million to support GIS Service in FY2022.

Survey Results for GIS Service

Approximately 23 percent of survey respondents used GIS service in the prior 12 months. Most respondents had a positive view of the GIS tools and the Enterprise GIS Team's implementation service. There was a general sense among the respondents that DoIT can increase GIS service utilization by expanding and improving the quality of the source data. Refer to the GIS Service section in **Audit Results** for more details.

Appendix D: Overview of Internal IT Services Not Included in The Survey

Service 10: Data Center and Cloud Service

The City's Data Center Service has been provided by Atos since 2012. The City's data centers host data of the City's 380 applications, including financial information, customer records, web services, historical records, and emails. The City's Cloud Data Service is a remote version of a data center which is hosted by Atos that lets City employees access their data through the Internet. Atos performs ongoing maintenance and updates; it owns multiple data centers in several geographic locations to safeguard the data during outages and other failures.

The City provides the following for the Data Center and Cloud Service to all City Employees:

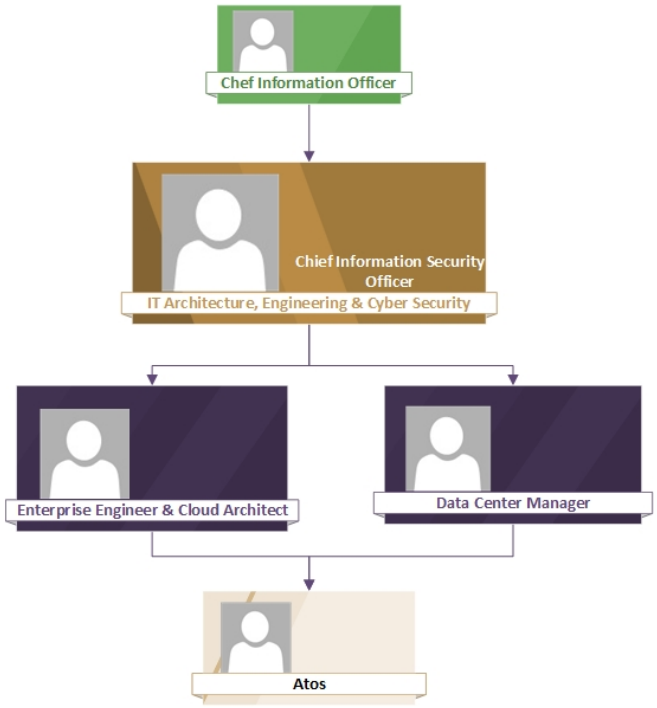
- Server and Storage Management and Administration
- Event and Performance Monitoring and Management
- Physical Database Support
- SaaS and Cloud Services Integration and Service Management

The City's Data Center Services have been provided by Atos and overseen by DoIT's Data Center and Cloud Services Team, as shown in **Exhibit 45** below.

Users can report an issue with their Data Center and Cloud Services through the Help Desk process outlined in **Exhibit 21**. Additionally, department contacts can request other services listed above by contacting the Data Center and Cloud Services Team directly.

Exhibit 45

IT Department Organizational Components Supporting Data Center and Cloud Services for the City



Source: Auditor generated based on DoIT Org Chart.

IT Budget for Data Center and Cloud Service

According to DoIT, the department allocated $16.6 million to support Data Center and Cloud Service in FY2021.

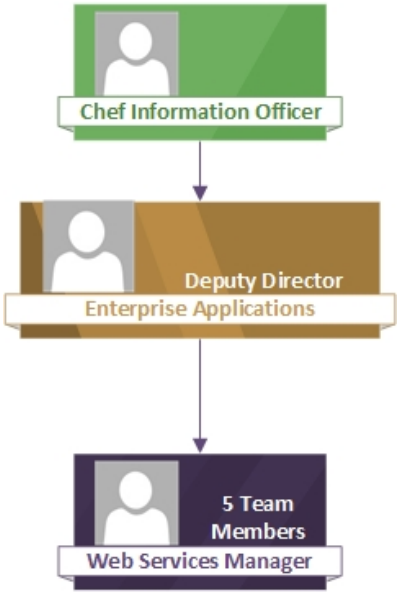
According to the FY2022 Non-Discretionary Budget in SAP, the department plans to allocate approximately $18.1 million to support Data Center and Cloud Service in FY2022.

Service 11: Web Services

The City's Web Services Team, shown in **Exhibit 46** below, manages and updates the City's public website (www.sandiego.gov), intranet site (CityNet), and SharePoint collaboration site. The Web Services Team's responsibilities include maintaining and enhancing the City's web content management system, establishing web design standards and guidelines, and supporting the web content editors of City departments. The Web Services Team uses Google Analytics to track and report web statistics for www.sandiego.gov and CityNet.

Exhibit 46

Department Organizational Components Supporting Web Services for the City



Source: Auditor generated based on DoIT Org Chart.

The City provides the following Web Services to the users with permissions to access and edit department or City websites:

- Public Website Support and Maintenance
- CityNet (Intranet) Support and Maintenance
- SharePoint Support and Maintenance
- Web Hosting Contract Management and Vendor Management
- Training and Web Content Management

Web Services Process

For Website Analytics, users can go to the Website Analytics website on CityNet to request a report by sending an email to the Web Services Team. The Web Services Team will generate the report based on the specific request from the requestor by using Google Analytics to track and report web statistics and send it to the requesting department.

For Website Updates, departments can designate staff to be web content editors to update websites by using Drupal after getting a Drupal Training or request Web Services Team assistance for the following Web Services Team-supported websites:

- Public site: https://www.sandiego.gov (link is external);
- CityNet: https://citynet.sandiego.gov; and
- Cityhub: https://cityhub.sandiego.gov.

IT Budget for Web Services

According to DoIT, the department allocated $0.6 million to support Web Services in FY2021.

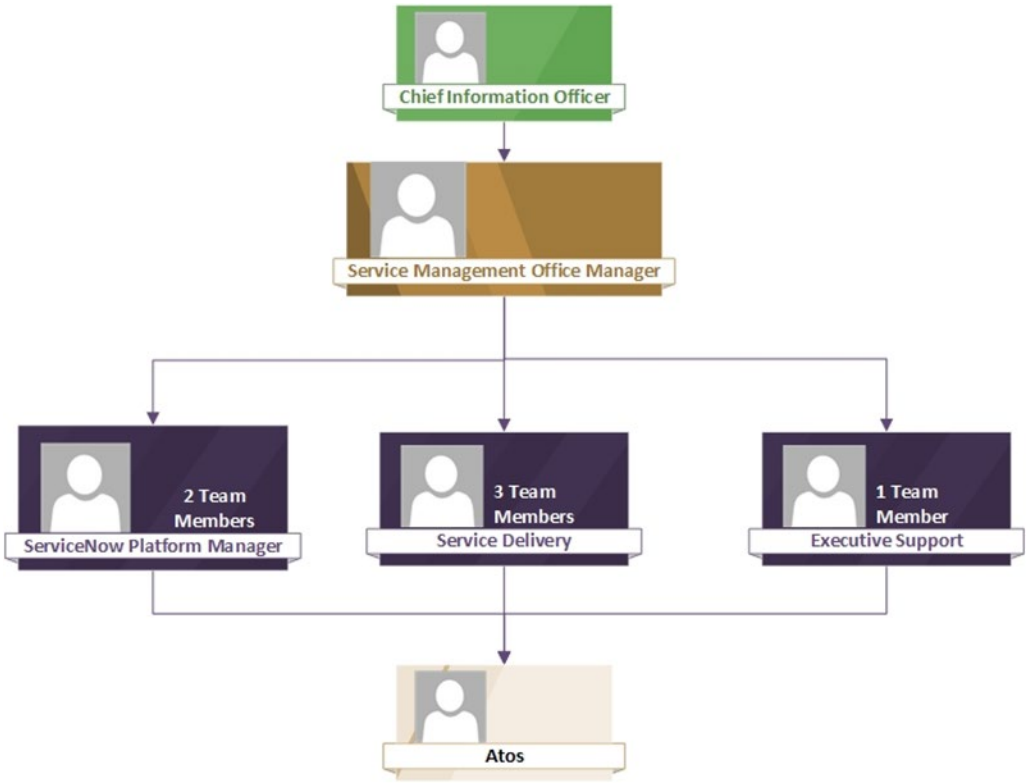
Service 12: Service Management Office

The City's Service Management Office (SMO) Division, shown in **Exhibit 47**, manages the City's end-user computer hardware and software standards and requests by following the Request Fulfillment/Service Request process. SMO also manages the enterprise change management as one of the IT Governance gates and follows the same Request Fulfillment process.

Users can request SMO Service through Help Desk. The Help Desk service process is outlined in **Exhibit 21**.

Exhibit 47

IT Department Organizational Components Supporting SMO Services for the City



Source: Auditor generated based on DoIT Org Chart.

IT Budget for Service Management Office

According to DoIT, the department allocated $13.7 million to support the Service Management Office in FY2021, which includes Help Desk and Deskside Support Services.

THE CITY OF SAN DIEGO

M E M O R A N D U M

DATE: June 29, 2021

TO: Andy Hanau, City Auditor, Office of the City Auditor

FROM: Jonathan Behnke, Chief Information Officer, Department of Information Technology

SUBJECT: Management's Response to the Performance Audit of IT Service Delivery Effectiveness

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This memorandum provides background information and management's response regarding the Audit of IT Service Delivery Effectiveness. We would like to thank the Office of the City Auditor for their thorough review of IT Service Delivery and feedback in their recommendations.

The Department of IT was pleased to see that the overall perception of IT Service Delivery was positive in the Auditor's survey results, and we agree with the recommendations for continuous improvement of services.

The Department of IT closely monitors metrics for over 140 contract Service Level Agreements (SLAs) and conducts an annual survey of all City employees to measure customer satisfaction with IT services. The SLAs provide visibility of the vendor's performance to contract requirements, and the survey feedback allows the Department of IT to adjust any areas of service where survey feedback calls for improvements.

In FY22 the Department of IT will be transitioning to new contracts covering three major areas of services that are replacing expiring contracts from 2012. Zensar Technologies was awarded the contracts for Enterprise Compute and Workplace Services, and CGI was awarded the contract for Application Development, Maintenance, and Support Services.

The new contracts provided an opportunity to modernize, automate, and centralize various aspects of IT service delivery. One area that will change significantly is a shift to a centralized IT Service Management (ITSM) system. In the previous contracts the vendors used multiple systems to track and process service desk tickets and service requests. Under the new contracts a centralized system will be used to track and process all service desk tickets, service requests, and service level agreement (SLA) reporting. The addition of the new centralized system will allow the Department of IT to publish Key Performance Indicators (KPIs) that were referenced in the Audit recommendations.

The target dates selected for the recommendations will align with the transition of the IT services contracts and the addition of a new centralized IT Service Management system for reporting the KPIs.

RECOMMENDATION #1

To ensure that the Help Desk meets required service levels and identifies improvement opportunities, service risks, and issues of Help Desk services delivery, the Department of IT should measure the following Key Performance Indicators (KPIs) for Help Desk and Deskside Support Service:

a) First Contact Resolution rate (FCR): A metric that measures the percentage of customers' questions and requests solved at first contact.

b) Average Resolution Time: This measures the average elapsed time from when an incident is reported (ticket is opened) until the incident is resolved (ticket is closed).

c) Ticket backlog: This is a measure of how many unresolved tickets are waiting to be handled by a service provider over a particular time frame.

d) Cost per ticket: The total monthly operating expense of the Help Desk divided by the number of tickets.

e) Recurring Incidents: Percentage of incidents that can be classified as a repeat incident (already occurred multiple times) relative to all reported incidents within the measurement period. (Priority 2)

Management Response: Agree with Recommendation.

While the Department of IT already closely monitors monthly SLAs related to these metrics to measure services and manage vendor effectiveness, a dashboard of related KPIs will be published for expanded visibility.

Target Date: July 1, 2022

RECOMMENDATION #2

The Department of IT should incorporate the following KPIs to measure and monitor SAP availability during business hours for keeping lost business hours to the bare minimum:

a) Number of unscheduled downtime events in the last quarter;

b) Average amount of unscheduled downtime per event in the last quarter;

c) Longest unscheduled downtime event;

d) Critical SAP module availability (such as Ariba, EAM, etc.); and
e) Length of time to recover from last unscheduled downtime event. (Priority 2)

Management Response: Agree with Recommendation.

The Department of IT schedules monthly maintenance windows to keep the City's SAP systems updated and secure and regularly publishes notices of maintenance outages on the SAP Portal for users to see when they log in. While unscheduled downtime is rare, the Department of IT will incorporate the recommended KPIs for SAP system availability to minimize any disruption of unscheduled downtime.

Target Date: October 31, 2021

RECOMMENDATION #3

To ensure that users acknowledge full capabilities of new SAP functionalities, the Department of IT and Business Process Coordinators should work with City departments to conduct training after performing an improvement/enhancement on SAP functions and measure the following KPIs on the training:

a) Training Completion Percentage Rate; and

b) Employee Training Satisfaction Rates. (Priority 2)

Management Response: Agree with Recommendation.

The Department of IT provides extensive SAP training resources to all City staff on CityNet with 148 training videos and over 400 SAP work instructions:
https://citynet.sandiego.gov/erp/training

New KPIs to measure training completion rates and employee satisfaction will be added for mandatory training related to major system enhancements.

Target Date: July 1, 2022

RECOMMENDATION #4

In order to improve remote work productivity, the Department of IT should consider tracking and improving productivity with VPN by measuring the following KPIs for VPN Connection Performance:

a) Application (such as SAP) Usage by VPN Connection – shows the trend of usage (users and system usage) before and after VPN connection; and

b) Device Health Trend - shows the device health and performance before and after VPN connection. (Priority 2)

Management Response: Agree with Recommendation.

The new IT services contracts that will be implemented in FY22 include new tools for expanded visibility of device health and user experience. The Department of IT will incorporate the new data for KPIs to measure application usage by VPN connection and device health trends.

Target Date: July 1, 2022

RECOMMENDATION #5

For increasing GIS service utilization, the Department of IT should consider expanding the source data to include more data desired by customers and having the following KPI to measure GIS utilization and usability among City Departments.

Additionally, in order to improve GIS data quality, the Department of IT should consider preparing a data quality report for data created by GIS users, which should include the KPIs for data completeness, data precision, data accuracy, and data consistency, such as the data error rate, percentage of untraceable data, etc. (Priority 3)

Management Response: Agree with Recommendation.

In FY20, GIS services were centralized in the Department of IT following feedback from City departments about the desire to expand and improve their GIS capabilities and data.

Six staff were hired in March 2020 to engage departments and provide support. The team, thus far, has generated applications to promote efforts such as Arts and Culture's Poetry of Resilience, READ proposed property procurement and sales review tools, DSD's Zoning and Parcel Information Portal, 5G invoice tracking and automation services for DSD, optimized routing expertise in support of ESD's new organics waste stream curbside collection in compliance with SB1383, and ESD's public-facing Delayed Greenery Collection interactive webmap. Stormwater is also supported via Workflow Manager and Data Reviewer applications in support of editing and data capture. PUD has configured applications in support of drinking water inspection tracking and environmental monitoring. Recruitment has completed for hiring four additional GIS staff.

Data is owned and captured by operational departments across the City. GIS coordination meetings and project-specific working group meetings are used to identify data needs across workflows. In an effort to better identify gaps in data requirements, the Department of IT will consider including specific query language within citywide surveys to better understand and provide data sources wherever possible.

The Department of IT agrees with the recommendation to consider preparing a data quality report including KPIs for completeness, precision, accuracy, and consistency.

All spatial data currently residing within the City's Production Data Warehouse and JPA SanGIS' Regional Data Warehouse must meet metadata standards for consumption. The

SanGIS Technology Advisory Board is the principle governing body overseeing data change management and custodianship.

Target Date: March 1, 2022

RECOMMENDATION #6

In order to optimize the cost of IT services, reduce the risk of over-spending, and improve the reliability of budget predictions, the Department of IT should consider making the budget allocation process more transparent and having the following KPIs of financial management for IT services provided by the Department of IT or CGI:

a) Cost/Benefit Estimation: Percent of project files containing cost/benefit estimates.

c) Post Implementation Review: Percent of projects where costs and benefits are verified after implementation. (Priority 2)

Management Response: Agree with Recommendation.

The Department of IT tracks costs and benefits for major projects on a regular basis to ensure project requirements are met and costs align with budget projections. The Department of IT will create new KPIs for cost/benefit estimation and post implementation review for major projects by Department of IT or CGI.

Target Date: July 1, 2022

RECOMMENDATION #7

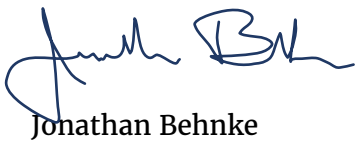
To ensure that the current set of services continue to meet the needs of City departments, and the Department of IT has reporting mechanisms in place for key service metrics, including those identified in this report. Additionally, the Department of IT should present them annually to City departments in the form of reports or dashboards, which can be incorporated into the reporting of IT budget, IT strategy, or other effective forums such as an intranet or internet site.

The report or dashboard should indicate how far the Department of IT is from its targets and what bottlenecks, if any, prevent it from achieving better results. (Priority 2)

Management Response: Agree with Recommendation.

The new IT services contracts that will be implemented in FY22 include new tools, data, and capabilities for publishing dashboards of key service metrics. The Department of IT will develop and publish new dashboards for the service metrics listed in the recommendations by the end of FY22.

Target Date: July 1, 2022



Jonathan Behnke
Chief Information Officer

JB/jl

cc: Jay Goldstone, Chief Operating Officer
Jeff Sturak, Deputy Chief Operating Officer
Matt Helm, Chief Compliance Officer
Ritchie Dioneda, Service Management Office Manager, Department of Information Technology
Darren Bennett, Chief Information Security Officer, Department of Information Technology
Scott Daeschner, Deputy Director, Department of Information Technology
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