Chapter 2
Assessment

A viable IT strategic planning process must take into account the City's strategic priorities, as well as its current business, operating, and IT environment. This chapter highlights key citywide imperatives, describes trends driving the demand for information technology, and presents PTI's assessment of the major IT strengths and opportunities for improvement at the City of Annapolis. This serves as important context for the recommendations presented in Chapter 3.

Strategic Priorities

The City's mission and vision statements identify five long-term strategic priorities to guide capital investments and ongoing city activities.

♦ **Public safety** – a safe and secure environment for citizens to live and work

♦ **Community participation** – open access to and citizen involvement in local government

♦ **Public infrastructure** – adequate public facilities and services to support the residential and business communities

♦ **Fiscal stewardship** – essential services provided in a manner that recognizes the restrictions of dwindling resources balanced against citizen demands

Strategic Priorities

◆ Public safety

◆ Community participation

◆ Public infrastructure

◆ Fiscal stewardship

◆ Quality of life

♦ **Quality of life** – a healthful, attractive, and satisfying place in which to work, visit, and play

These priorities address the City's business drivers and environmental trends, described in the following section. Chapter 3 of this IT strategic plan provides recommendations and projects designed to directly support Annapolis' strategic objectives.

Business Context

With input from the project steering committee and nearly 70 stakeholders, PTI established the near-term context which drives the demand for information technology in the City of Annapolis. These needs and expectations require that the City employ technology to transform its operations within current and future budget constraints. PTI identified the following key business drivers:

♦ **Increasing demand/expectation for 24/7 service and information** – Constituents expect prompt service in response to their inquiries and needs, particularly with regard to eGovernment services (e.g., online transactions, public information, permitting, job applications, public safety/crime data, citizen complaints). Annapolis citizens desire more than just announcements from the city web site; they want more personalized interaction with elected officials and city staff. Technology has become a critical vehicle for communications (one way, two way, and interactive) with citizens, business partners, and other stakeholders – using a variety of media (telephone, web, email, social networks).

♦ **Expectation for transparency and accountability** – City council members, executives, and external authorities (e.g., federal regulators) demand better management information and reporting. In addition, community members expect prudent use of taxpayer dollars and easy access to public information.

♦ **Pressure to improve operational efficiency** – Annapolis faces increasing demands for municipal services without an associated growth in revenues. City residents want service and information at their convenience. They also want environmental sustainability, expansive services, responsible government, and prudent growth management. However, according to the 2009 Mayor's State of the City Report, Annapolis' budget "requires departments to continue the same quality service with less." Further, the new city administration recently reported that the "city government faces a $2.6 million structural deficit in the current fiscal year… and a $6.4 million structural deficit for the fiscal year 2011."

♦ **Growing emergency planning and homeland security requirements** – Annapolis' proximity to Baltimore and Washington, D.C. increases citizen demand for safety and security. Growing use of the city harbor incurs additional risks and constituents want multiple, clear channels for mass notification in event of an emergency.

♦ **Significant reliance on grant funding** – During recent years, the City has augmented revenues with more than $20 million of annual intergovernmental, grant and miscellaneous funding. The 2009 Mayor's State of the City Report notes that "approximately 20 programs have been filed with the State for economic recovery dollars" and "25 staff members were trained through a program at the Anne Arundel Community College in grant writing." However, the economic downturn will likely diminish these revenues and federal stimulus spending only offers a temporary solution. In addition,

According to the 2009 Mayor's State of the City Report, Annapolis' budget "requires departments to continue the same quality service with less."

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these funding sources typically cover capital investments, but fail to cover ongoing operating and maintenance costs, forcing the City either to increase annual spending accordingly or abandon the projects in future years.

♦ **Priorities of new city leadership** – In 2010, the City's new administration likely will implement new city strategic goals and priorities, particularly in light of increasing budget constraints. These changes may impact the city organizational structure, operations, scope of municipal services, and staffing levels. The new city administration has also displayed a greater emphasis on the role of technology in city operations.

Balancing growing citizen expectations against the imperative to contain costs places a high reliance on the workflow and communication capabilities offered by information technology. The City recognizes improvements in IT can – and must – help address these challenges. Accordingly, the City of Annapolis worked collaboratively with PTI to conduct a detailed assessment of its current IT environment. The remainder of this chapter describes the results of our assessment work.

Assessment Summary

PTI's consultants collected and analyzed data provided by the City pertaining to its IT labor, spending, infrastructure, and application portfolio. The consulting team used this information to assess the City's technology position against industry standards, best practices, and PTI's database of local government technology metrics. The consultants gathered additional information through one-on-one interviews and focus groups with the City's managers and staff – providing broad opportunities for participation.

PTI validated findings and recommendations through direct feedback and planning workshops with the City's project steering committee. PTI organized this analysis around four strategic IT focus areas, framed by the City's overall business context:
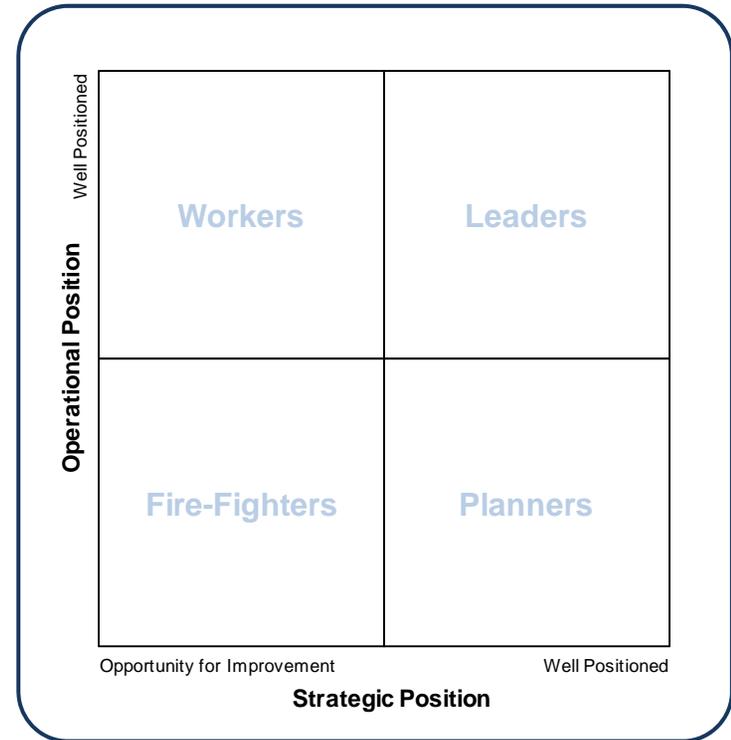
♦ **IT Decision Making** – processes, roles, and tools that support IT planning and investment decisions

♦ **IT Service Delivery** – organizational structure and staffing approaches that support applications and infrastructure

♦ **Applications** – software that supports the City's business functions

**City of Annapolis
Business Drivers and Strategic Priorities**
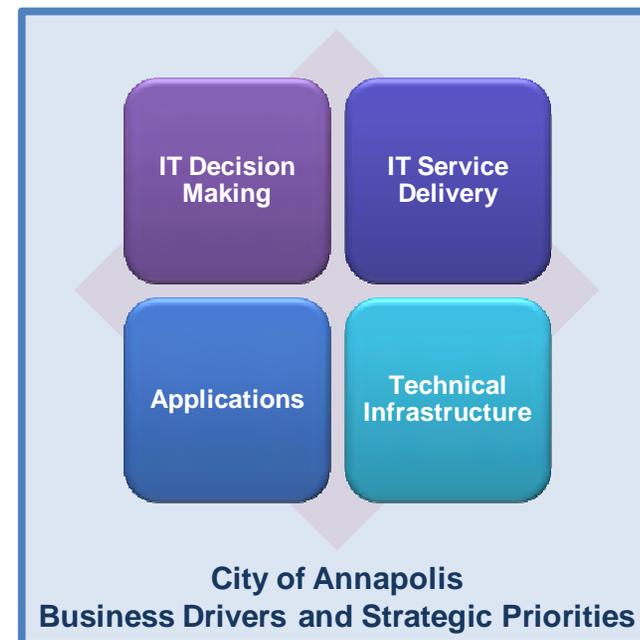
♦ **Technical Infrastructure** – hardware, systems software, databases, and network components that support the City's applications

PTI utilizes a proprietary tool to summarize an organization's baseline IT position. Applying quantitative rankings to nearly 100 key indicators; PTI plots the position of each IT focus area in one of four quadrants.

1. **Leaders:** Focus areas in this quadrant indicate a combination of effective operations, appropriate strategic investment and positioning. This quadrant represents the ideal position for each focus area.

2. **Planners:** Focus areas in this quadrant often have well laid out plans, but conduct current operations inefficiently. Generally speaking, these areas require attention to bridge the gap between current operations and their desired IT position.

3. **Fire-Fighters:** A position in this quadrant indicates a focus area that largely functions in a reactive manner. Correspondingly, these areas need both strategic guidance and tactical attention.

4. **Workers:** Focus areas in this quadrant conduct current operations very efficiently, but lack a strategic outlook for the next three to five years. An effective planning effort can move these areas into the "Leaders" quadrant, often with relatively small investments.
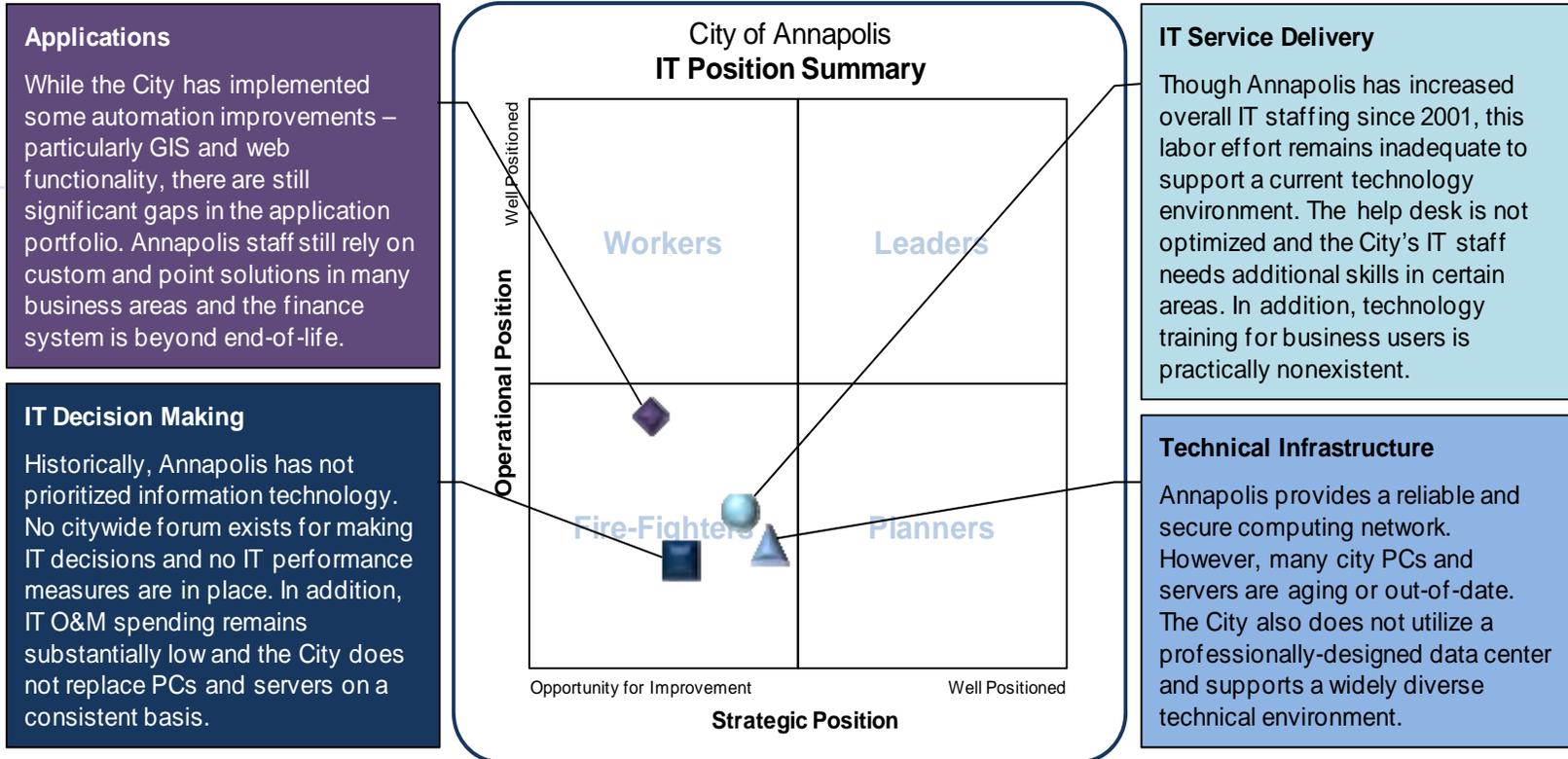
PTI's assessment tool plots the position of an organization's IT focus areas based on over 100 strategic and operational indicators.

The X and Y axes indicate "opportunity for improvement" at the bottom and "well positioned" at the top. The X axis (horizontal) charts the City's strategic position for three IT focus areas; the Y axis (vertical) charts the City's operational position across the same four areas.

Since most organizations tend to improve operational efficiency as they conduct better planning processes, positions for each focus area typically progress along a linear trend line that starts at the bottom-left and moves to the top-right.

The figure on the following page illustrates the City of Annapolis' current IT position, evaluated within this framework. This assessment is based on information gathered from interviews and focus groups with city staff, data collected on the City's technology environment, and PTI's IT benchmarks for local government.

Applications

While the City has implemented some automation improvements – particularly GIS and web functionality, there are still significant gaps in the application portfolio. Annapolis staff still rely on custom and point solutions in many business areas and the finance system is beyond end-of-life.

IT Decision Making

Historically, Annapolis has not prioritized information technology. No citywide forum exists for making IT decisions and no IT performance measures are in place. In addition, IT O&M spending remains substantially low and the City does not replace PCs and servers on a consistent basis.

City of Annapolis
IT Position Summary

Well Positioned

Operational Position

Workers   **Leaders**

Fire-Fighters   **Planners**

Opportunity for Improvement   Well Positioned

Strategic Position

IT Service Delivery

Though Annapolis has increased overall IT staffing since 2001, this labor effort remains inadequate to support a current technology environment. The help desk is not optimized and the City's IT staff needs additional skills in certain areas. In addition, technology training for business users is practically nonexistent.

Technical Infrastructure

Annapolis provides a reliable and secure computing network. However, many city PCs and servers are aging or out-of-date. The City also does not utilize a professionally-designed data center and supports a widely diverse technical environment.

The remainder of this chapter presents detailed assessment results for each of these IT focus areas, categorizing findings as either strengths or opportunities for improvement. Chapter 3 presents specific recommendations aimed at moving the City of Annapolis' IT position into the top-right quadrant.

Assessment Findings

This section details PTI's findings surrounding the City of Annapolis' current IT position. It includes a quantitative baseline for IT spending and staffing, as well as areas of strength and opportunities for improvement in each of the four strategic IT focus areas.

Quantitative Baseline

This quantitative profile provides a starting point from which the City can measure its progress. It also informs the findings presented later in this chapter.

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$1.57M

Spending on IT operations and maintenance (O&M) in FY 2009

$40

IT O&M spending per citizen in 2009[14]

$2,646

IT O&M spending per city full-time equivalents (FTEs) in 2009[15]

This quantitative profile provides a starting point from which the City can measure its progress.

The City of Annapolis spends $1.57 million – approximately 2.22% of its total operations and maintenance (O&M) expenditure – on technology O&M[13], inclusive of fully-burdened staff salaries, hardware and software maintenance, and other recurring technology-related expenditures.

City of Annapolis IT O&M Spending

IT-Titled Personnel $1,032,704 66%

Goods & Services $533,700 34%

	Expenditures	% of Total
Total City Operating Budget	**$70,511,221**	
IT Operating Budget	**$1,566,404**	**2.22%**
IT Goods & Services	**$533,700**	**0.76%**
Management Information Technology	405,300	
Other Departments	128,400	
IT Personnel	**$1,032,704**	**1.46%**
Management Information Technology	801,880	
Other Departments	230,824	

[13] O&M figures were reported by City staff. They include spending on personnel and goods and services, while excluding debt service, depreciation, and transfers to capital projects.
[14] Based on a population of 38,992 and an FTE count of 592 provided by City of Annapolis staff.
[15] As of March 2010, MIT lost 1.50 FTE through FY 2011 due to budget cuts and associated layoffs.

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8.69

Management Information Technology FTEs providing IT O&M labor

2.00

IT-titled FTEs in the Police Department providing IT O&M labor

1.44

Non-IT-titled FTEs (shadow staff) providing IT O&M labor

Management Information Technology (MIT),[16] with 8.69[17] FTEs, provides *application services, infrastructure services,* and *customer services* to the City of Annapolis staff. The chart below presents the distribution of IT labor effort (in FTEs).

Annapolis IT Labor Effort
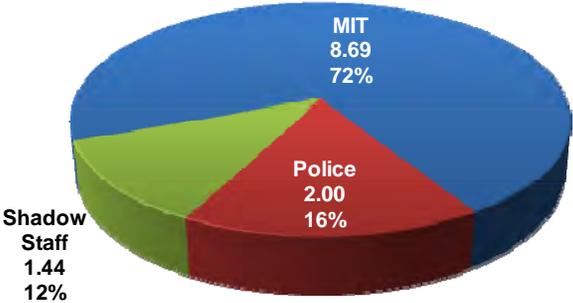
The following table presents a more detailed breakdown of the City's IT O&M labor.

IT Labor Category	FTE
MIT staff	9.00
MIT intern	0.25
Total MIT labor[18]	**9.25**
GIS data maintenance	-0.50
IT capital projects	-0.06
Total MIT O&M labor	**8.69**
Police IT O&M labor	**2.00**
Shadow staff[19] IT O&M labor	**1.44**
Total IT O&M labor	**12.13**

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[16] Throughout this report, the term "IT" refers to technology and labor effort on a citywide basis. MIT refers to the Management Information Technology division within the Finance Department.

[17] As of March 2010, MIT lost 1.50 FTE through FY2011 due to budget cuts and associated layoffs. Figures throughout this chapter are based on FTE levels prior to the March layoffs.

[18] This consists of MIT's nine full-time staff and a quarter-time intern. The total IT O&M labor of 8.69 FTEs excludes labor allocated to GIS data maintenance and IT capital projects. PTI conducted this labor analysis prior to the March 2010 layoffs.

[19] Departmental staff with primarily non-IT duties who devote 10% or more of their time to IT support. At Annapolis, nine shadow staff provide the 1.44 FTE labor shown, representing $113,828 in personnel costs. PTI also conducted this analysis prior to the March 2010 layoffs.

380

Desktop computers in use at the City

150

Laptop computers in use at the City

45

Servers in use at the City

135

Specialized devices (e.g., blackberry, mobile data terminal) in use at the City
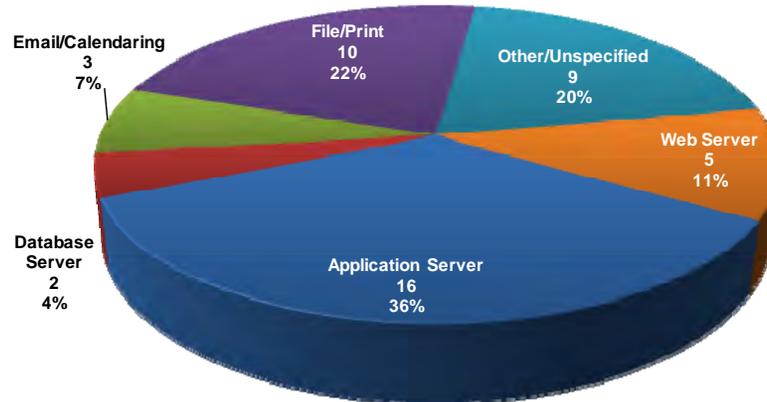
The City of Annapolis also has an extensive technology infrastructure. The figure below presents the types of computers currently in use at the City.

PCs by Type

- Laptop 28%
- Desktop 72%
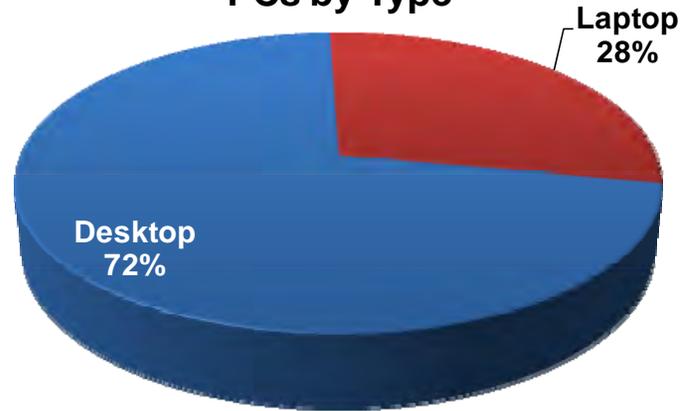
The following chart depicts the primary functions of servers currently in use at the City.

Server Primary Function

- Email/Calendaring 3 7%
- File/Print 10 22%
- Other/Unspecified 9 20%
- Web Server 5 11%
- Database Server 2 4%
- Application Server 16 36%

2

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The following sections present findings from PTI's assessment of Annapolis' current IT environment. Both strengths and opportunities for improvement are organized around the four strategic IT focus areas:

♦ IT decision making

♦ IT service delivery

♦ Applications

♦ Technical infrastructure
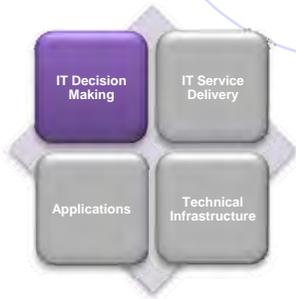
IT Decision Making

IT decision making encompasses an organization's ability to make informed technology investment decisions aligned with its business needs. From a strategic perspective, IT decision making (including governance processes and tools) represents a critical area, as it determines how the City plans for, allocates, and manages its IT resources. Without appropriate leadership and direction, ad hoc decisions and sub-optimal investments often occur.

Strengths

The following table describes areas of strength and associated impacts of the City's IT decision making.

Finding	Impacts
The City participates in several regional IT initiatives. Annapolis partners with the City of Baltimore and a number of area counties in the Baltimore Urban Area Homeland Security Work Group (UAWG), which engages in sustained regional planning to coordinate emergency response and recovery. Key IT-related UAWG subcommittees include information technology, backup 911 and dispatch, closed circuit television, radio communications and wireline interoperability. The Annapolis Fire Department contracts with Anne Arundel County for Computer-aided Dispatch (CAD) and Records Management systems. In addition, Annapolis participates in county, regional and state GIS data sharing agreements, state GIS governance (MSGIC - Maryland GIS Coordination), the Maryland Municipal Information Technology Association (MMITA), and is a member of the One Maryland broadband stimulus ARRA grant funding and wire line initiative.	• Realizes economies of scale – reducing infrastructure and services costs for partners • Enourages a regional approach to selected government services • Serves the shared needs of all particpating organizations

*Aligned with best practices, Annapolis participates in several regional IT initiatives.*

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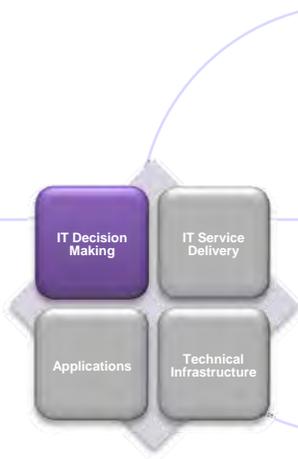
The City utilizes defined standards for core IT equipment.

Finding	Impacts
Annapolis leverages central purchasing for IT. MIT handles procurement for all IT equipment (e.g., PCs, servers, enterprise software).	• Lowers purchase costs of IT goods • Streamlines IT procurement efforts
GIS and website plans are in place. The City implemented most of its GIS plan, developed in 2004, contributing to significant GIS advancements, and has an active, interdepartmental team guiding GIS goals and initiatives. The City developed a clear and detailed website plan and successfully outsourced implementation to Deep Blue, a web development vendor. This resulted in significant website improvements.	• Supports the City's use of land- and parcel-based information and services • Enables future GIS and Web integration with new software investments – streamlining operations • Increases public access to public information and City geospatial data • Enhances citizen participation
The City utilizes defined standards for core IT equipment. MIT updates city workstation and server standards every six months.	• Simplifies IT service and support • Leverages purchasing power and economies of scale
Annapolis uses a simple, straightforward IT O&M funding approach. The City funds IT as a single entity through the standard budget process.	• Encourages collegiality and cooperation among departments for IT resources • Avoids the complications of chargeback models

Opportunities for Improvement

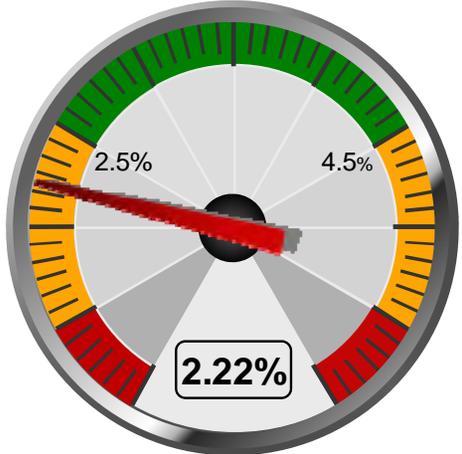The following table identifies the City's IT decision-making challenges and associated impacts.

Finding	Impacts
IT governance deviates from best practices. Annapolis lacks a single, citywide forum for making IT investment decisions. Current IT decision-making processes and criteria are not well communicated. In addition, key stakeholders (e.g., end users, department managers) do not consistently participate in IT decisions and the city does not utilize tools (e.g., balanced scorecard) to evaluate potential IT investments.	• Limits the City's ability to align IT investments with strategic goals and priorities • Leads to siloed and potentially uninformed IT decisions • Hinders executive buy-in for technology initiatives

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IT Decision Making | IT Service Delivery

Applications | Technical Infrastructure
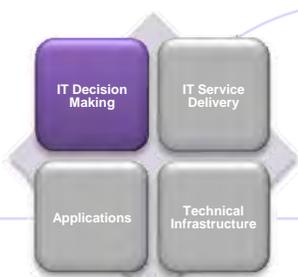
Finding	Impacts
Citywide IT operations and maintenance (O&M) spending falls at the low-end of PTI's target range for local government.[20] Though Annapolis has more than tripled IT spending from $474K to $1.57M since 2001, it still only represents 2.22% of total O&M spending. This amount still falls below PTI's target range (2.5 – 4.5%) and is not commensurate with a desire to fully integrate technology into city operations and improve efficiency and effectiveness. 2.5% 4.5% **2.22%**	• At a strategic level, funding for IT O&M activities will not support future advancements and the use of technology as a strategic tool • Prevents the City from realizing the full value of its IT investments • Provides a suboptimal level of technology equipment and support • History of underinvestment has created a backlog of unmet IT needs
The City lacks executive-level IT leadership. Technology has not been sufficiently advocated at the highest level of city management. The City does not have a clearly-defined IT vision or direction.	• Leads to underinvestment in technology and associated support • Risks IT investments not aligning with the desired direction for IT • Increases the likelihood IT processes will remain unguided in the future • Obscures IT investment criteria

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[20] PTI's target benchmarks are based upon IT spending, staffing, and inventory data collected from surveys and local government clients since 1993 as well as industry best practices. These target benchmarks are updated annually.

IT Decision Making | IT Service Delivery

Applications | Technical Infrastructure
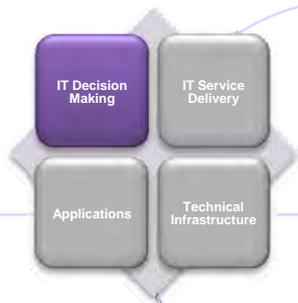
Contrary to best practices, the City does not utilize a formal technology replacement fund.

Finding	Impacts
Annapolis does not measure IT performance. The City does not use any quantitative metrics to evaluate IT performance.	• Hinders effective IT governance • Prevents the City from identifying and addressing IT related service issues • Decreases confidence in IT service delivery
Major IT investments are not funded with capital dollars. Large IT expenditures currently follow the standard budget process and are funded with O&M dollars. No capital funding is available for IT.	• Limits funding opportunities for large IT investments • Creates wide fluctuations in O&M spending for expensive software systems and associated hardware – impacts budgeting process for all departments
The City does not utilize a technology replacement cycle/fund. Annapolis does not replace PCs, servers, etc. on a defined periodic cycle. In the past few years, about $100,000 has been allocated annually for PC and server replacement, an insufficient amount for such a program.	• Prevents the City from leveraging the potential cost savings offered by a planned replacement cycle • Complicates the process for replacing and/or upgrading IT assets • Results in an outdated and heterogeneous technical infrastructure • May reward departments that can make the best business case rather than addressing citywide needs and priorities
Failed SAP implementation has discouraged major investments in IT applications and system integration. The City's attempt to install an enterprise resource planning (ERP) system was not successful and drained a significant amount of City resources.	• Creates barriers to interdepartmental collaboration • Fosters excessive risk aversion, resulting in slow and halting IT progress • Hinders the City's ability to eliminate severe automation gaps

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IT Decision Making | **IT Service Delivery**
Applications | **Technical Infrastructure**
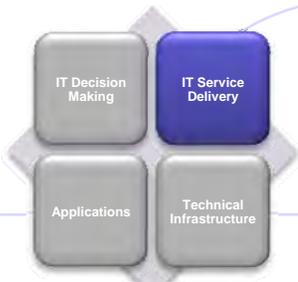
Collaboration between central IS and other departments is improving.
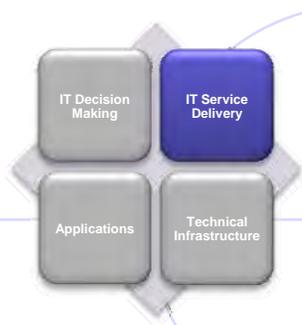
IT Service Delivery

IT service delivery refers to the organization, staffing levels, and allocation of technology support personnel. An assessment of this focus area provides insight into the alignment of IT services with overall business objectives and IT service demands.

Strengths

The following table describes the City's IT service delivery areas of strength and associated impacts.

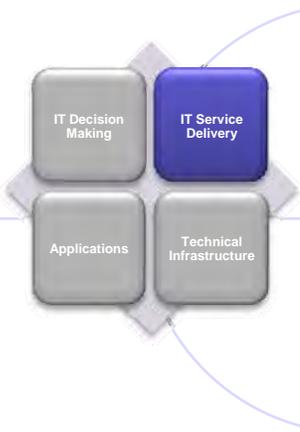| Finding	Impacts
Since 2001, Annapolis increased citywide IT staffing levels. The City has more than doubled IT-titled O&M staffing from 5.27 FTEs to 10.69 FTEs. This raised IT O&M staffing as a percentage of overall city FTEs from 1.07% to 1.81%.	• Increases business user confidence in IT • Improves IT service responsiveness • Enhances the value of IT operations
Citywide PC support ratio falls within PTI's target range. Annapolis' ratio of PCs to PC support FTEs is 283-to-1, within PTI's target range of 250-to-1 and 350-to-1. **Ratio of PCs to PC Support FTEs** 250:1 350:1 **283:1**	• Provides efficient service by allocating an appropriate amount of MIT labor to PC support • Diminishes the creation of workaround processes • Increases the utilization of technology across the City
Business units have a high regard for MIT personnel. City staff reported in focus groups and interviews with PTI that MIT staff: • Provide responsive infrastructure and desktop support • Demonstrate appropriate IT skills to support the existing portfolio • Share knowledge well and demonstrate positive relationships • Deliver adequate IT service and support • Continue to enhance city GIS	• Increases willingness of users to contact MIT for support needs • Builds strong individual IT service relationships

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IT Decision Making

IT Service Delivery

Applications

Technical Infrastructure

The City's IT-titled O&M staffing level falls significantly below PTI's target range for local government.

Opportunities for Improvement

The following identifies the City's challenges regarding delivery of IT services.

| Finding	Impacts
The City's IT-titled O&M staffing level falls significantly below PTI's target range for local government. The City of Annapolis' IT-titled O&M staffing as a percentage of total O&M staffing is 1.81% – below the low end of PTI's target range – and not commensurate with the City's desire to leverage IT for improved efficiency and effectiveness. **IT-titled O&M staffing as a percentage of total O&M staffing** 3% 5% 1.81%	• Impairs the City's ability to realize the full value of its IT investments • Provides only a basic level of IT support • Hinders the City's ability to strategically plan for and effectively administer IT systems and services • Diminishes Annapolis' ability to leverage IT tools and processes to improve business practices • Compromises the City's ability to install, configure, and maintain business applications
Annapolis' IT help desk is not aligned with best practices. The City has not implemented an effective approach or process for managing IT service requests, incidents, and communication with business users. MIT personnel respond to the City's help line on an "as available" basis and do not provide 24/7 support. In addition, Annapolis lacks IT service performance measures and has not fully leveraged the capabilities of its IT help desk software, HelpBox.	• Leads to inconsistent IT support approaches (e.g., triage vs. resolution) • Misallocates IT skills and staff • Ineffectively supports ongoing operations and maintenance of technology investments • Decreases operational efficiency
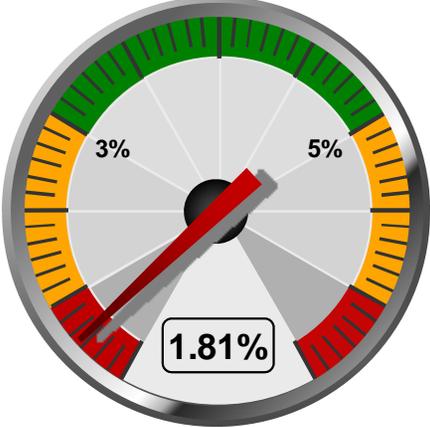
PTI

Finding	Impacts
Annapolis' IT labor allocation can be further optimized (see figure below). The City's application services labor allocation falls below PTI's target range, likely due to significant automation gaps and the low-tech nature of existing applications. The City's IT administration labor allocation exceeds PTI's target range, primarily because MIT's small organization size makes achieving economies of scale difficult.	• Undermines the City's ability to utilize new application capabilities as an engine of productivity • Ineffectively supports ongoing operations and maintenance of technology investments • Leaves some business units resistant to centralized IT service delivery • Leads business users to utilize point solutions and/or shadow applications in place of misunderstood or unknown application capabilities

The distribution of IT support labor does not align with best practices.

The figure below presents the distribution of the City of Annapolis' IT-titled labor effort across the five IT functions. The blue bars denote the citywide IT labor effort relative to PTI's target allocation ranges, denoted by yellow rectangles. These ranges represent a typical target for municipal IT labor allocation.

City of Annapolis Current IT O&M Staffing Allocation Relative to PTI's Target Ranges
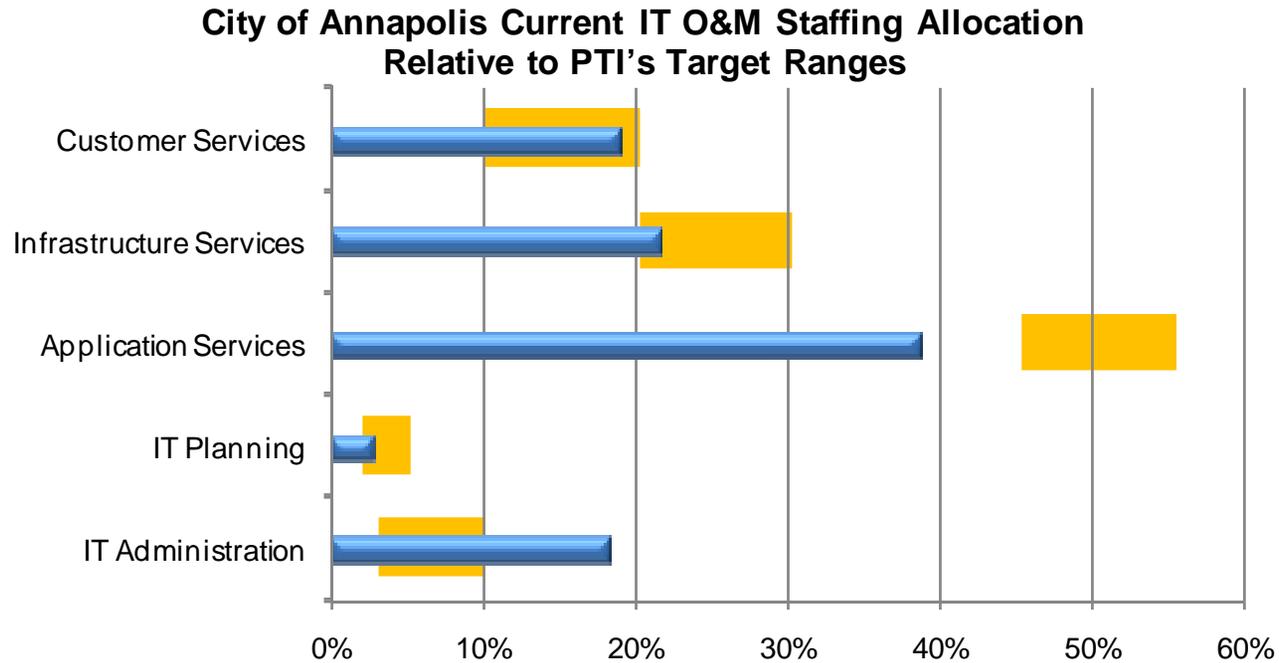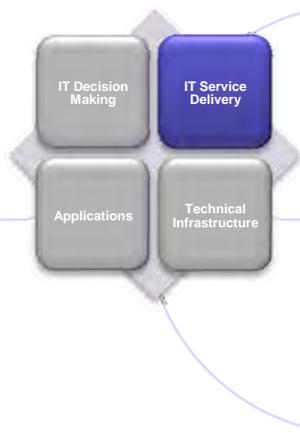
The table below presents Annapolis' current IT O&M FTE data and totals for each functional area.

The City of Annapolis Current IT O&M Staffing Allocation[21]

IT Functions	IT O&M Labor Effort (in FTEs)		
	MIT Effort	Police (APD) IT Effort	Total IT Effort
Customer Services	1.55	0.39	1.94
Infrastructure Services	2.39	0.11	2.50
Application Services	2.36	1.50	3.86
IT Planning	0.34	0.00	0.34
IT Administration	2.05	0.00	2.05
Total:	**8.69**	**2.00**	**10.69**

The following chart augments this analysis. It presents the City's application services labor effort by functional areas served (e.g., public safety). It also adds shadow staff[22] labor effort into our analysis, further demonstrating unmet software support requirement in various functional areas – most notably in community services (e.g., parks and recreation software support).

**Application Support by Functional Area (including shadow staff)**

Legend: ■ MIT FTE   ■ Police (APD) FTE   ■ Shadow Staff FTE

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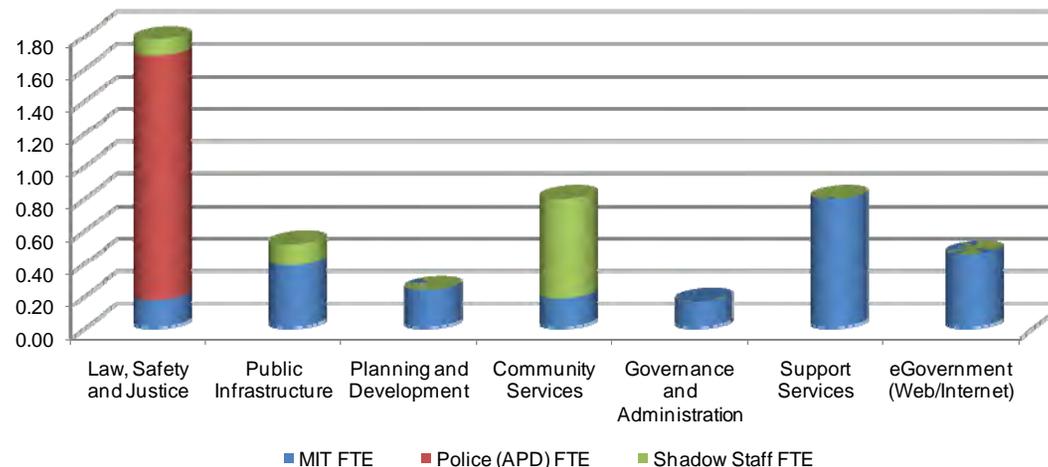
[21] As of March 2010, the City lost 1.50 FTE from MIT through FY 2011 due to budget cuts and associated layoffs.
[22] The term "shadow staff" refers to non IT-titled personnel who spend more than 10% of their time performing IT support functions.

IT Decision Making

IT Service Delivery

Applications

Technical Infrastructure
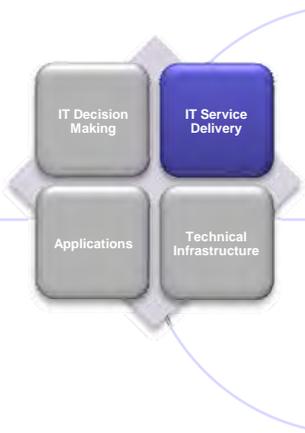
Annapolis' IT staff has limited skills in some key areas.

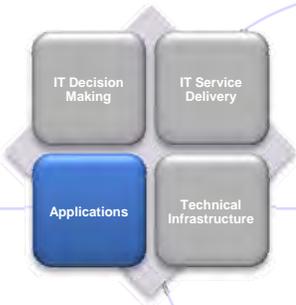| Findings	Impacts
Annapolis' IT staff has limited skills in some key areas. Through interviews and focus groups with PTI, both business users and IT staff reported a need for more of the following skills: • Tier 2 PC support (deskside problem resolution) • Business analysis (identifying automation to support business needs) • Project management • Database administration	• Undermines Annapolis' ability to leverage technology for improved efficiency and service quality • Hinders the City's ability to effectively analyze business needs, implement appropriate solutions and manage large scale projects • Reduces IT support capabilities • Inhibits business functions as departments remain uninformed and/or uninvolved
The City does not emphasize IT training. Annapolis has no defined IT training program, curriculum, or budget. Many departments still rely on manual and/or paper-based processes and lack the business analysis and/or IT skills necessary to convert to efficient electronic data systems. In addition, some business users are reluctant to develop technology skills. Position descriptions have not had IT skills updated for several years, and there is no provision for continued IT training.	• City does not realize full productivity increase possible from technology • Reduces IT support capabilities • Limits IT advancement opportunities – making Annapolis a less desirable place to work • Lowers confidence in central IT support
MIT work and storage space will not support future growth and expanded use of technology. Annapolis' current IT office, closet and equipment space is limited. It is crowded at current IT staffing levels and will not adequately support additional IT personnel or equipment.	• Constrains the efficiency and effectiveness of IT service delivery • Risks loss or misplacement of IT assets
Software support skills focus on older technologies. Given the age and/or low-tech nature of some city applications (e.g., Therefore, Groupwise), Annapolis maintains some IT skills that will not apply to more modern software and technologies.	• Hinders the City's ability to implement new software solutions and leverage technology for improved efficiency and service quality • Diminishes future IT support capabilities

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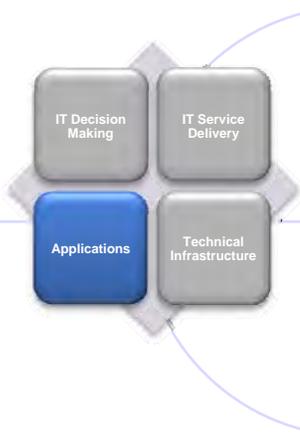
Applications

Applications refer to the software used to support core business functions. PTI reviewed the City of Annapolis' software inventory and gathered additional information through interviews and focus groups. This section documents those findings.

Strengths

The following table describes the City of Annapolis' application strengths and associated impacts.

Many significant application investments are planned or currently in progress.

Finding	Impacts
The City has achieved a number of automation improvements since 2001. Examples include: • Improved web and GIS functionality • Parks and recreation management (CLASS) • Permit management (TraKit) • Emergency management and planning (WebEOC, Dialogic) • Fire management and quartermaster systems • Upgraded police records management system (RMS), computer-aided dispatch (CAD) system and mobile data terminal (MDT) system • Work order management (iWorQ)	• Enhances city services • Streamlines specific business processes and supports business operations • Increases productivity • Limits manual processes • Reduces data errors • Improves government transparency and accessibility
Annapolis recently requested proposals from vendors for new utility billing and HR/payroll systems. The city plans to implement new software packages for these both of these functions during 2010.	• Modernizes part of the City's application portfolio and improves overall business automation • Increases Annapolis' ability to track and manage utility customer accounts, usage, and associated billing operations • Enhances the City's ability to manage human resources/payroll data and business processes • Adds additional capability, improving overall operational efficiency • Provides opportunities to implement automated workflow

Opportunities for Improvement

The following table describes the City's application portfolio challenges.

Finding	Impacts
Many core applications provide only limited functionality. In particular, the City's maintenance management, human resources management, utility customer information management and financial management systems lack many modern features.	• Increases the time and resources required to conduct routine operations • Requires business unit staff to create shadow applications and paper-based processes to make up for deficiencies in (or a lack of) current automation • Fosters siloed information storage and retrieval • Limits management reporting abilities
Many severe gaps exist in the City's application portfolio. The most critical areas include: • Document management • Maintenance management • Citizen relationship management (CRM/311) • Project management • Contract/grant management • Decision support/business intelligence • Remote IT support tools	• Requires manual business processes • Increases data errors and process redundancy • Places a high reliance on institutional knowledge • Fosters creation and use of shadow systems and point solutions
Annapolis' financial management system is beyond end-of-life. Therefore is more than 16 years old, built on out-of-date technologies, and is not commercially supported. It is heavily customized and its lack of security features prevents decentralization of numerous functions, including time entry, budget development, and purchase requisitions.	• Risks failure of a critical municipal system • Limits data and information sharing • Hampers decision support capabilities • Encourages the use of shadow systems and point solutions • Impedes productivity
Core systems lack integration (e.g., finance system, iWorQ) and the City relies excessively on point systems and redundant data entry. Most of the City's major applications are not integrated and, as such, do not share critical data.	• Requires users to manually transfer data from one system to another • Duplicates data in core systems and shadow applications • Misses opportunities to optimize business operations

Many severe gaps exist in the City's application portfolio.

IT Decision Making

IT Service Delivery

Applications

Technical Infrastructure

2

@PTI

Finding	Impacts
Personal productivity software is not up-to-date. Annapolis still uses Microsoft Office XP (2002).	• Leaves city employees with outdated software for word processing, spreadsheets, presentations, and scheduling – hindering collaboration and limiting productivity • Complicates document transfer with external organizations, vendors, citizens, and governmental partners.
The City's internet presence and capabilities still need improvement. Although several advancements have been made since the last IT plan, Annapolis' web site is not citizen-centric – it is still organized by department rather than customer need – and lacks strong citywide branding. Business units reported difficulty in adding new content and keeping departmental sites up-to-date.	• Limits online citizen self-service • Hinders public information access • Misses opportunities to reduce customer traffic at city facilities

IT Decision Making

IT Service Delivery

Applications

Technical Infrastructure

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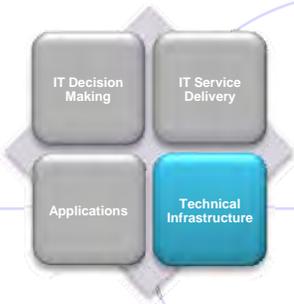
Technical Infrastructure

Technical infrastructure refers to the hardware, networks, databases, and operating systems that support city applications. An organization's technical infrastructure provides the critical foundation for connectivity and processing power.

Strengths

The following table describes technical infrastructure areas of strength and associated impacts.

Nearly all Annapolis PCs are standardized on a single personal computer operating system.

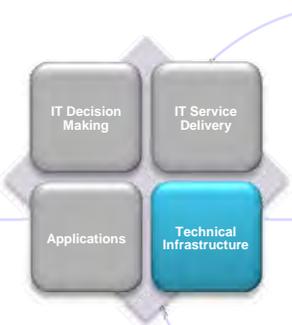| Finding	Impacts
The City's network is reliable. Annapolis experiences little to no unplanned network outages.	• Reduces and/or eliminates disruptions in business operations by minimizing downtime • Increases end user confidence • Provides a robust medium for communications
Annapolis' phase 3 fiber network infrastructure build is complete. The City has expanded high-speed network connectivity to most city facilities and locations.	• Expands network access and connectivity • Continues to facilitate data communications, application availability, and modern technology across the City
Nearly all city PCs are standardized on a single personal computer operating system. The City reported that nearly all of its 530 PCs run on the Windows XP operating system.	• Simplifies PC image creation, management and deployment • Provides a common and familiar support environment • Eases patch deployment • Reduces maintenance costs
VoIP capable phones are installed in all fiber connected locations. The City has installed new phone technology in most locations. This amounts to an estimated 85% of City phones (425 of 500).	• Develops a foundation for pursuing unified communications, which bolsters staff productivity and streamlines operations
The City appears to employ sufficient network security and spam control for external threats. While an IT security audit/assessment was beyond the scope of this study, business users reported satisfaction with the effectiveness of current spam control. In addition, no significant security breaches have occurred at the City of Annapolis in recent years.	• Minimizes operational disruptions • Increases business user confidence in technology • Ensures strong defense against viruses and spam originating outside of the City's core network
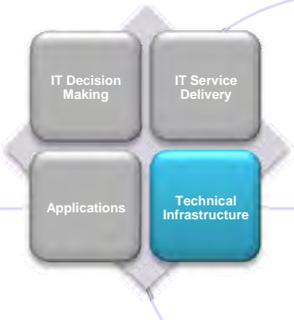
Opportunities for Improvement

The following table describes challenges related to the City's technical infrastructure.

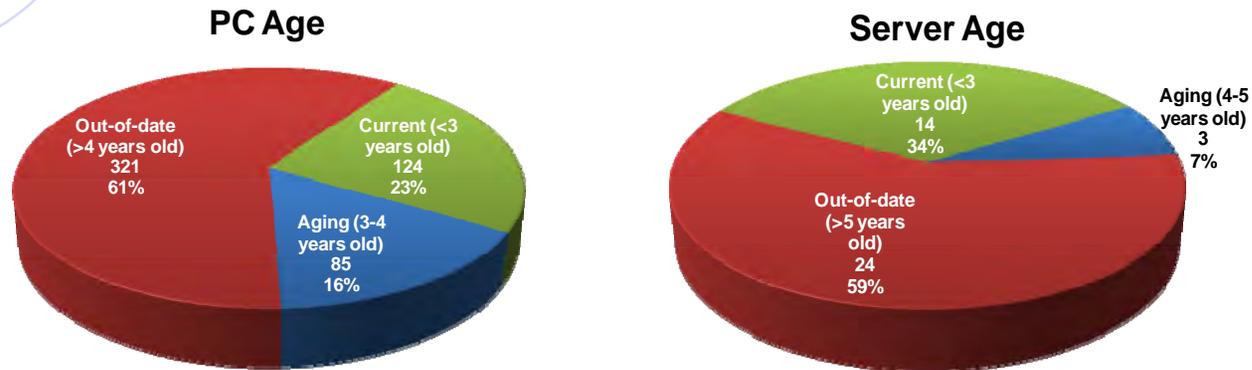*City data centers (MIT and Police) do not fully align with modern design standards.*

Finding	Impacts
City data centers (MIT and Police) do not fully align with modern design standards. Both lack electronic access control (e.g., RFID cards), tracking, and advanced surveillance, and long-term backup power capabilities. In addition, neither data center utilizes modern environmental controls – such as individual server temperature tracking and particle filtering. Both facilities have water-based fire suppression systems, which would damage core IT equipment.	• Endangers the City's physical IT assets and operations due to unauthorized access, fluctuating electrical power, and environmental risks • Risks service disruption to critical operations, control, communication, financial, and other information systems • Increases infrastructure maintenance costs, labor effort, and energy consumption
Annapolis lacks an off-site backup/disaster recovery location. The City's current disaster recovery plan assumes recovery within city limits and calls for removing backup tapes from the existing data center. Restarting operations requires access to the data center along with undamaged servers and infrastructure.	• Diminishes the City's ability to provide essential services during and/or after a disaster or emergency • Increases operational risks • Slows the City's recovery from unplanned outages – impacting business processes
Annapolis lacks wireless connectivity for staff use. The City has not installed indoor wireless access points (WAPs) to support Internet and intranet connectivity for city staff and contractors.	• Constrains operational efficiency • Limits city staff information access while in meetings and/or away from primary workspace

A significant portion of the City's servers and workstations are aging or out-of-date.

Finding	Impacts
A significant portion of city servers and workstations are out-of-date (see charts below). No more than 33% (using a three-year replacement cycle) of the City's PCs should qualify as out-of-date. No more than 20% (using a five-year replacement cycle) of the City's servers should qualify as out-of-date.	• Increases the risk of hardware failure • Risks loss of key operational data and disruptions in city business • May inhibit the City's ability to adequately serve users as applications and operating systems require faster hardware • Requires increasing maintenance and support

PC Age

Out-of-date (>4 years old) 321 61%
Current (<3 years old) 124 23%
Aging (3-4 years old) 85 16%

Server Age

Current (<3 years old) 14 34%
Aging (4-5 years old) 3 7%
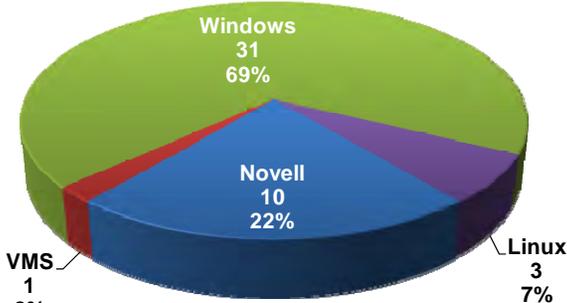Out-of-date (>5 years old) 24 59%

The City does not conduct regular third-party security audits or assessments.

Finding	Impacts
The City does not conduct regular third-party security audits or assessments. Annapolis' physical and logical security programs and tools have not been evaluated in recent years nor does it have a formal security policy in place. A thorough review would include permissions, use policies, firewalls, networks, data center access, monitoring tools, among other elements.	• Increases the likelihood that unauthorized access attempts go undetected • Prevents the City from proactively addressing potential security threats/breaches

MIT supports a diverse server operating system environment.

Finding	Impacts
MIT supports a diverse server operating system environment. The City maintains 45 servers running on four different server operating system families.[23] This heterogeneous environment directly results from siloed automation decisions and point solutions. Upgrades planned within the next few years, including replacement of the financial system, will mitigate this problem. **Server Operating System** Windows 31 69% Novell 10 22% Linux 3 7% VMS 1 2%	• Increases the labor effort and cost associated with server support • Risks loss of key operational data and disruptions in city business • Complicates server support cross training and backup
Annapolis does not employ formal approaches to information sharing, database management, or storage. City IT staff reported supporting a variety of different database platforms, including Oracle, SQL Server, Access, and a number of proprietary databases. No clear criteria exist for making database management system (DBMS) product determinations. End users reported distributed records management and data stores, redundant data across departments, and insufficient storage capabilities. This also results from siloed automation decisions and point solutions.	• Reduces data integrity • Inhibits data integration • Complicates the City's data storage environment • Expands the City's data storage requirements • Limits Annapolis' ability to provide reliable, real-time information to support decision making

*   *   *   *   *

After validating these findings in a workshop with the City's project steering committee, PTI facilitated the development of a citywide IT vision and goals that build upon the City's existing strengths and address the opportunities for improvement identified in this chapter. Chapter 3 presents this new strategic IT direction for Annapolis.

[23] The "Windows" family includes 2000, 2003, 2008 and XP Pro.