INFORMATION TECHNOLOGY

The Information Technology vision and accomplishments to date continue to be an integral part of the management, public safety framework, and communication goals of the Fuller Administration. Business practices, customer needs, technology and communications continue to evolve and converge in new areas creating new efficiencies and opportunities; information technology needs to remain flexible in order to be viable and sustainable.

This fiscal year marks the completion of the fifth year that Information Technology has been identified in the Capital Improvement Plan as a separate capital need. Major upgrades to the City's IT infrastructure have made upgraded conference rooms, sound systems, public WiFi in municipal buildings and digital signage in the hallways of City Hall possible. Unseen to the public in all of the city buildings are items such as copper and fiber cabling, and a standardization and implementation of POE (Power over Ethernet) network switches which have allowed the City to expand opportunities, access, security and communications. Wireless access points, security cameras, and network speeds that have increased ten times their previous capacity from five years ago all combine to create a network and IT system that is truly state of the art. Fiber-optic-based opportunities have provided cost-saving solutions for Public Safety, including integration with our radio towers and reduced phone costs in all city buildings.

The Information Technology Department conducts regular department needs analysis. These needs are vetted and initiatives, procurements, network enhancements, and modifications to workflow are developed. The IT Department holds regular technology meetings, bringing in the technology representatives from Police, Fire, Library and the School Department to share their needs, challenges and accomplishments. These sessions are informative and provide great opportunities for the sharing of resources and experience. The IT Department also performs research via the Internet, the State IT listserv, third-party value-added resellers, vendors and consultations in order to protect and enhance the City's technology software, hardware and systems.

The volatility of the technology revolution has changed the face and expectation of the manner in which government does business. From mainframes to smartphones as well as from server farms to cloud applications and storage, Newton is creating a municipal technological paradigm. In the past twenty-five years, the IT Department has evolved from a group of ten programmers and a single network support person to a group of seven network/ applications / financial, GIS and VoIP specialists, a web developer and only one programming support position.

Technology plays a crucial role in every department to help support their constituents. Current trends include moving applications and software from dedicated servers to virtual servers on storage area networks in order to establish a downsized yet more versatile IT infrastructure that reduces the data center footprint, is easier to administer and significantly reduces energy costs. "Cloud computing" shifts technology from internal infrastructure solutions to secure, web-hosted strategies that deliver increased functionality and flexibility using a mix of public and private cloud-based application and platform services. Data security and data privacy will remain paramount requiring automated as well as manual capabilities that detect, assess, and respond immediately to threats.

During the past several years, technology has become more local, social and mobile. Transparency and access to data is expected by employees and the public alike. Mobility is the most requested resource by all departments. The desire for an improved "user experience" will drive the creation of more layered approaches in application design with the emphasis on increasing citizen services and untethering desktop workers by providing wireless devices, thus increasing mobility and improving efficiency for employees and citizens alike.

Positioning the City of Newton for the future requires continuous evaluation of current infrastructure, applications, security, and interfaces, an understanding of the future of technology, and the development of a blueprint for investments in and modernization of the City's technology.

Categorizing Citywide Needs - Overview
Four broad categories have been defined to construct a framework for better interpretation and planning. These four categories are Citywide Infrastructure, Software, Applications and Process Improvement, Security, and User Support/Training. These four form the basis of the City's technology.
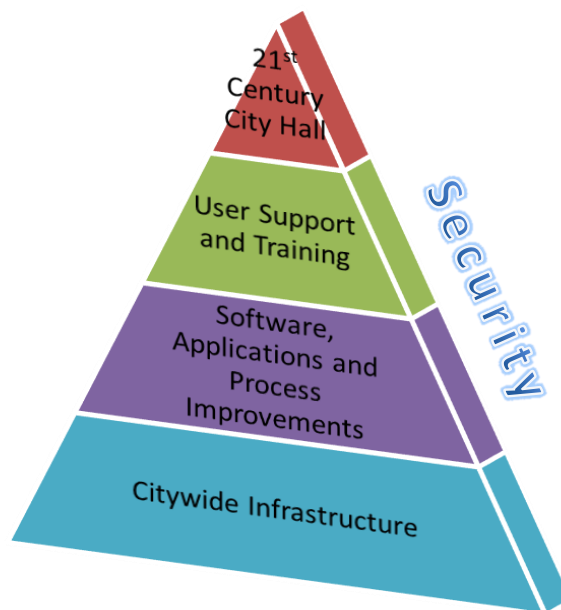
Citywide Infrastructure
Components: Physical Plant, Fiber, Copper, Redundancy, Data Centers, Wireless, Convergence, and Voice, Data and Video.

Overview: Providing the city with an infrastructure capable of handling current and future technology needs is the foundation upon which all projects, both current and future, relies. It has opened the door to many modern opportunities.

Installation of a modern, redundant fiber network was the primary need. It was paramount to enabling the City to build a mirror-imaged, disaster-prepared system capable of keeping financial systems, public safety, and other critical data available in the event of catastrophe and was also a critical component as the Newton Public Schools move their technology forward. The "loop" design ensures a secondary path to any location and with "spanning tree enabled switches" costs

for multiple paths can be kept in check. Extra fiber strands allow dedicated connections outside of the data network for special projects, security initiatives, one-time interactive projects as well as live feeds to NewTV.

The municipal VoIP (Voice Over Internet Protocol) replacement program has been a success. Building by building, department by department, the IT Department has removed phones, gateways and other equipment while rewiring several departments and eliminating many Centrex and POTs (Plain Old Telephone Service) lines. By cancelling unused phone lines, the IT Department has reduced the City's monthly Verizon landline phone bill by 25% or $60,000 per year. We have replaced the phone systems in every non-school city building except for the Police Department while building a failover system with the redundancy to keep all sites up even with a partial failure.

Demand for network bandwidth continues to be a challenge for the Newton Public Schools. Support for "Bring Your Own Device" (BOYD) is literally a standard component of education in Newton. Students bring an average of 2 mobile devices to school. All tenth graders are now being provided with a laptop as well. Providing a wireless network and internet access with adequate bandwidth to handle this demand is critical; this requires scalability, management, security and redundancy in front of these wireless endpoints.

While the physical plant is established, all IT entities continue to invest in Storage Area Network (SAN) solutions with virtual servers hosting the applications that access this data. The virtual server framework provides efficiencies such as power conservation (reducing dedicated server footprint), ease of administration, and downtime reduction. SAN technology allows for similar efficiencies managing disk storage devices as a separate network subsystem rather than being physically connected to each server. This architecture allows for quickly assigning additional storage space from the SAN to individual physical or virtual servers and managing SAN disk space efficiently from the central SAN system. The continued investment in virtual servers and SAN technology will save the City time as well as money.

Consolidating data centers frees up time, environmental and maintenance costs, valuable office space, and centralizes equipment and security. After the initial investment of time and money to consolidate sites, the ongoing savings will easily outweigh the consolidation costs.

Software, Applications, and Process Improvements
Components: *21st Century City Hall, Financial Systems, Email and Calendaring System, Asset Management, Work-Order Processing, Integrated Solutions, Increased Operational Efficiencies, Better Decision Making, Coordinated Resources, Interdepartmental Collaboration, Increased Communication with the Public*

Overview: The City of Newton currently has several software applications that address the needs of many departments:

- Finance Plus - Employee and payroll systems
- Community Plus - Permit, licensing and code enforcement system
- Munis - General Ledger, payables & procurement; receivables system
- GIS - Geographic Information Systems

- PeopleGIS - the keystone application including asset, fleet, time and storm management all rolled into one with direct API connections to other applications such as GIS
- QED - Public Safety system
- Document Indexing
- Laserfiche - Document Scanning and management
- Exchange in the Cloud - The City email and calendar system as well as secondary data storage
- Website – We have begun the site upgrade to Vision from Civica.

The Financial System

The 23-month long conversion to replace all applications that handle accounting, budgeting, procurement, payroll and employee benefits from Finance Plus to Munis is underway. Our conversion on July 1, 2019 for the general ledger, payables-related modules, and anything that revolves around a fiscal year calendar was successful. Challenging and rocky at times, the professionalism, diligence and dedication of the financial departments were the single strongest contributing factor towards this phase of the project.

Human Resources-related items such as employee information, benefits, payroll, and interaction modules for personnel administration are slated for January 1, 2020.

We are working mostly via WebEx with the Tyler payroll specialist 2 to 4 days per week with occasional onsite visits. The School Department, Financial Information Services, Human Resources and IT have spent many hours working on cleaning data prior to importing drafts into the new system.

This transition will provide many opportunities for enhanced workflow, office automation, and a major reduction in paper. Mobile apps will allow us to approve payroll, requisitions, employment modifications and more while away from our desktops. Enhanced paperless workflow will be a game changer.

The eventual implementation of the online Employee Information Center will be a feather in the cap of the HR department.

Purchase of a New City-Wide Permitting System

We have hired a consultant to help study workflow and write an RFP for permitting and licensing that covers the needs of every department. The goal is to have a single, scalable system that will greatly increase inter-departmental efficiencies and public user access. The target is for an integrated system by ISD, Fire, HHS, Public Works, the City Clerk and other departmental use, with an interface for the public.

From ISD to DPW, Engineering, Fire, Police, Health, Parks & Recreation, the City Clerk and more, a consistent system will bring value and efficiency to the city. As with the financial project, the participation of all departments is key to the success of the implementation.

The Website

For the past 9 years, the city has used a content management system that allows each department to maintain their own web pages to host the municipal website. This solution covered every department excluding Schools, Library and Police who each maintain their own website. During this period, we have had upgrades to migrate away from locally hosted and responsive design which allows our web pages to reformat themselves based upon the type of device browsing our site.

We have negotiated a no-cost upgrade to a brand new package recently bought and endorsed by Granicus. With enhanced search ability, direct ties into social media, a complete facelift and reorganization of our data, this 11 month long implementation is expected to address all of the complaints about the current site.

On-Line Payments

The City partners with "City Hall Systems," a third-party vendor to handle credit card transactions from the various City systems. This conversion is being accomplished one application at a time and involves a lot of research, meetings and testing to avoid false starts and mistakes. Some projects may take several months to implement while others are progress swiftly.

Security

Components: *Disaster Recovery, Alarms, Monitoring, Video-Based Security, Policy, Consistent Solutions across Departments.*

Overview: There are many facets to security that must be addressed, including the following:

- Protection from attacks via the Internet – our switches, access points, wired and wireless, firewalls and routers need to be up to date; operating systems must remain current with patches and fixes;
- Protection from users – education and awareness will help prevent employees from bringing and using unsecured devices in the workplace.
- Protection from disgruntled or departing staff – an early warning system is used covering all manner of employee departure, initializing standard protective steps to ensure the safety of data and equipment. We are standardizing onboarding and terminations.
- Protection during remote access - Every department has key employees who remotely access systems. Even during catastrophic weather events that leave the city shutdown to all but essential personnel, there are still many people doing City business as usual.
- Protection from specialized attacks such as phishing and other user-specific or position-specific attacks

The protection of the City's data and networks begins on the inside. The City is continually reviewing and upgrading security systems and practices to address new concerns that were historically non-issues. With the installation of new technology and solutions, the City is remaining vigilant in the fight to eliminate potential exploitations to protect the City, its employees and its residents.

Video monitoring done with sensitivity to privacy of schools, public buildings, public spaces, weather forecasts, and traffic to ensure the safety of students and the community are a high priority. Responsibility varies by location and audience. Solutions that work across departments

will provide efficiency, enabling the consolidation of back end equipment to conserve server needs, licensing, and maintenance and support costs.

Additionally, the City will need to standardize storage of historic video, develop consistent means of retrieval, and ensure compliance with State and Federal laws while protecting the rights of all citizens and employees.

User Support & Training

Components: Training for IT Staff and End Users, Enhanced User Awareness of Technological Opportunities, Opportunities for Remote Access

Overview: In-house training for technical staff is critical in preserving the City's IT investments. Rapid changes in technology and solutions require frequent, in-depth training and education on new or updated systems and solutions.

Keeping the IT staff knowledgeable in current applications is only one piece of the challenge; training users and documentation of processes must be done. Time and again, functions and processes that are performed infrequently are often the source of mistakes. The best training practices include repetition. Frequent training opportunities are also critical to keeping all staff current and prepared.

Ensuring all employees are aware and informed of changes in policy and how it affects them involves a structure and delivery mechanism from IT that ensures everyone remains knowledgeable.

Training delivery methods have evolved as well. New methods of training such as pre-recorded classes available from the internet/intranet, sophisticated FAQ web pages, and user groups can supplement the teacher-pupil system.

FY2021 – FY2025 Information Technology Needs Analysis by Department

Clerk of the Council, City Council, City Clerk, Elections

Clerk of the Council FY2021 – FY2025 Needs: New staff support, website oversight, Council Chambers enhancements

Clerk of the Council: Technology in the City Council Chamber has been a challenge. We have begun the procurement process to outfit the Council Chambers with a movie theater style projection system that preserves the historic significance of this classic room yet fulfilling modern expectations and needs for the board and the public.

Newton has long been respected for swift web updates and adhering to open meeting laws. The timely posting of agendas, minutes and backup documents has allowed our citizenry to remain well informed. The Council, Clerk and Elections use the Civica website system for displaying agenda, minutes and pertinent files associated with the Full City Council as well as the six standing committees. We are working with Granicus to move over to their Vision Content Management System with technology that is literally a decade newer. While we do not yet have the optimum solution, we continue to push for the optimal convenience to a very complicated challenge.

With the eventual implementation of a new Permitting system and an ability to handle sophisticated requirements across numerous departments, our goal is a centralized method to track Special Permits from inception to permit issuance, detailing all documentation with updates and revisions as well as payments.

We continue to watch Speech to Text technology and look forward to the day when affordable software can differentiate between voices and understand more of the jargon that we use in everyday speech, especially in night meetings. Until then, minutes will continue to be recorded and transcribed.

City Clerk FY2021 – FY2025 Needs: Business Licensing and End to End Online Application and Payment

City Clerk: The business database continues to run as a stand-alone application that does not interact with any other system. It requires the participation and research of several other departments and thus should be a shared system that is viewable by all required parties.

Elections FY2021 – FY2025 Needs: Continued election night support, early voting application.

Elections: The historic responsibilities of the department include voter registration and election administration. The biggest change in voting is the early voting law which allows registered voters to cast their vote on an absentee ballot, automatically updates the voter records, and synchronizes with the Commonwealth VRIS database.

With assistance from the IT department, election night automation and online results reporting is as advanced as any other city or town in Massachusetts. Live intermediate results are posted beginning roughly 15 minutes after the polls close and final, unofficial results are consistently posted within the hour of poll closings on election night.

Census Records FY2021 – FY2025 Needs: Improved Census Collection

Census Records: The historic responsibilities of the department include managing the census database.

While waiting for a state sponsored online secure solution for census collection, the IT Web Developer has written and continues to refine an application that allows respondents to the census to accomplish this formerly manual task online. The savings from manual entry to the volume of mail and to the cost of postage are all positive benefits realized through technology.

Executive Office

Executive FY2021 – FY2025 Needs: Continued support for a new administration and furthering the use of technology in new and meaningful ways

Executive: The Information Technology Department assisted Mayor Fuller and her team in an efficient transition not only with physical technology but with access to data, training, modifications to existing systems, and a greater presence through social media. We have begun writing small apps to reduce paperwork and enhance efficient workflow for tasks such as noise ordinance waiver request forms. We enjoy using the website and audio/visual systems in new and meaningful solutions to enhance communication.

Comptroller's Office & Newton Retirement System

Comptroller FY2021 – FY2025 Needs: Upgrade Financial System to Munis

Comptroller/Financial Reporting: The biggest challenge for the Comptroller and IT will be to guide the migration of our financials into Munis while running the old system in parallel until the milestone cutover dates. The "go live" date of July 1, 2019 for the financial side was a success albeit a rocky road. Tentatively, January 1, 2020 is the cutover for the employee benefits related portion.

Newton Retirement System FY2021 – FY2025 Needs: Ongoing support, as needed.

Newton Retirement System: The Newton Retirement system is a separate department that is intricately tied to the City's financial system. Therefore, the IT department provides PC support, recommendations on new equipment, and access to the City's network.

Purchasing

Purchasing FY2021 – FY2025 Needs: Enhanced Office automation using the full power of the new financial system, Munis

Purchasing: Automation of the requisition and purchase order systems and eliminating paper are the goals and expectations of everyone involved in Newton's procurement system, as well as migration to the new Munis software.

Assessing

Assessing FY2021 – FY2025 Needs: Continue to look for an efficient way to interface with CAMA (Computer Assisted Mass Appraisal software) from the field.

Assessing: The Assessing Department uses the Vision database to manage the valuation of property. Data is imported from Vision into Community Plus once a year. We are anticipating opportunities for better collaboration between Vision and our new permitting software. The Vision system is now on a virtual server.

The department maintains a robust set of web pages that allow residents, businesses and realtors to query property information online. Internal systems are slated for migration to our storage area network. Several of the Assessing department specific systems are approaching end of life and should be migrated to the storage area network.

Treasury

Treasury FY2021 – FY2025 Needs: Assistance in continued automation and support of services; continue to offer enhanced online payment systems. We look forward to assisting the new Treasurer in any and all technology initiatives as well as continued support in the Munis conversion.

Treasury: The Treasury Department is outfitted quite well with equipment and software. The department's increased agility utilizing the new phone system and Active Directory makes it easier for employees to retrieve necessary services from any workstation within the department while maintaining a very high level of security. The most significant technology needs for Treasury will be to continue automating online the many different transactional payments to eliminate data entry.

Law

Law FY2021 – FY2025 Needs: More digitization and Optical Character Recognition (OCR). Enhance search services. For the first time the department will be using a case management software system entitled Time Matters. With assistance from IT we interviewed software vendors and support consultants for many months before arriving at the optimal fit for our legal department.

Law: The Law Department is a paper intensive department largely due to the nature of their jobs and the legal system in Massachusetts. Enhanced search capabilities and access to information are perhaps the most important technology needs of this department. The biggest new tool for a resource for the Law Department would be to scan, OCR and index the information on paper in many four drawer file cabinets. The summer of 2017 saw a test case with interns scanning and automatically "OCR-ing" the binders of opinions into searchable data. We learned that, although easy to do, it is extremely labor intensive.

Human Resources
Human Resources FY2021 – FY2025 Needs: The new financial system and the migration of employee data and payroll from Finance Plus into Munis is a colossal challenge. This will involve working with Munis, FIS, Schools and IT to automate HR as much as possible and not merely duplicate old ways in a new system. As with other departments with new heads, we go out of our way to give them the tools and technological resources to hit the ground running and enable their success.

Human Resources Revising and rewriting Standard Operating Procedures, committing to the minimization of paper, and improving applicant and employee portals will create significant opportunities to modernize HR.

Information Technology

Information Technology FY2021 – FY2025 Needs: The department will need to maintain a full complement of staff and sufficient funding to enable the realization of the technology vision.

Information Technology: Between project management and assisting departments in wisely choosing replacement software that fits with the city's requirements moving forward, the IT department's goal is to deliver 21st century technology for employees and residents alike.

Planning & Development

Planning FY2021 – FY2025 Needs: Mobility and training

Planning & Development: This large, mobile department spans two floors and maintains varied working hours that involve two very different audiences; from daytime employees to employee relations and document administration to night meetings and presentations to elected officials and the public, Planning has many disparate needs. We hope that untethering more employees from desktop PCs and raising awareness of all the resources already available will assist the department in efficiently providing the best solutions using the best data. We have outfitted all of the City Hall conference rooms with large flat screen monitors and wall mounted PCs.

Public Buildings
Public Buildings FY2021 – FY2025 Needs: Assistance in the quest for mobile applications and paper reduction

Public Buildings: The department is well-outfitted with equipment and communications capacities. With the advent of Munis, it is expected that paper will be replaced effectively and efficiently.

Financial Information Systems
Financial Info Systems FY2021 – FY2025 Needs: Continue support for the department.

Financial Info Systems: FIS will be integral in the conversion process for the Munis solution. While the IT department oversees user administration, hardware support, and works alongside FIS, the interactions for Payroll, Personnel, Benefits, etc. will be led by FIS and championed and supported by IT.

Newton Police Department

Police Department FY2021 – FY2025 Needs: Support Police network and resources when requested.

Police: IT supports the Police Department when requested. We recommend that all servers be virtualized and mirrored.

Newton Fire Department

Fire Department FY2021 – FY2025 Needs: Support as needed for the Emergency Operations Center (EOC) and applications such as the anticipated shared permitting and inspections system. Support for radio systems on city fiber networks with redundancy and Simple Network Management Protocol (SNMP) notification of issues.

Fire: In the past year, the IT Department has assisted in the implementation of many technology initiatives in the Fire Department. IT continues to assist and remains on call for EOC operations at Fire Headquarters. With assistance from IT, much equipment has been purchased, networks have been built, and processes have been defined. The LUA messaging application has enabled smart phones to take a step forward in assisting emergency operations requirements. The Fire Department will be deeply involved in the selection of a new permitting system.

Inspectional Services

Inspectional Services FY2021 – FY2025 Needs: All-encompassing permitting application, elimination of the paper glut. Increase digitization and OCR. Enhanced search services.

Inspectional Services: All staff in ISD now have tablets with an enhanced Verizon connection that withstands the weak spots that are experienced in some areas of the city. These tablets give inspectors access to the existing Community Plus application, general data, email and the ability to take pictures.

ISD will be deeply involved in the selection of a new permitting system.

Department of Public Works

Public Works FY2021 – FY2025 Needs: IT continues to assist in the implementation of PeopleGIS, the City's Asset Management program that incorporates all streets, sidewalks, water, sewer, and storm water infrastructure. We also support the DPW expansion of mobile devices to increase efficiency and productivity using cloud-based apps.

Department of Public Works: From GIS support to database maintenance and WebQA/311 administration, IT works very closely with Public Works. We have coordinated many office moves over the past year between City Hall, Crafts Street and Elliot Street. Responsibility for phones as well as data and maintaining high speed access regardless of location are our standards for all departments.

DPW will be deeply involved in the selection of a new permitting system.

Health & Human Services

Health & Human Services FY2021 – FY2025 Needs: Anticipate migrating applications into the new permitting system.

Health & Human Services: The Health Department continues to expand their use of Social Media and welcomes new technology. H&HS has been a heavy user of Community Plus for permitting and licensing as well as annual and recurring inspections and liquor-related events.

Health and Human Services will be deeply involved in the selection of a new permitting system.

<u>Senior Services</u>

Senior Services FY2021 – FY2025 Needs: Video surveillance system

Senior Services: The Newton Senior Center on Walnut Street serves as a multipurpose building for seniors over the age of 50, and Veterans of any age. In response to the growing technology demands of the seniors, the Center is outfitted with numerous wireless access points to meet the demand.

The original sound system has been replaced with several smaller, easy to setup systems that serve a wide range of users. We replaced an aging video system with a 75" HD flat screen and soundbar.

IT is working with Senior Center staff to determine how much video surveillance is required.

<u>Veterans' Services</u>

Veterans' Services FY2021 – FY2025 Needs: Continue to support needs and anticipate future projects.

Veterans' Services: IT supports and contributes to all Veterans' initiatives as requested.

<u>Newton Free Library</u>

Newton Free Library FY2021 – FY2025 Needs: Assist in the support and upgrade of the Library wired and wireless networks. Prepare to merge the Library Storage Area Network into the City SAN.

Newton Free Library: The Newton Free Library has made great strides in recent years solidifying their network infrastructure, improving the wireless network available for public use and reducing the number of servers in use by virtualization. The IT team has accomplished great things working hand in hand with the Library technical staff. We pride ourselves in our relationship with other municipal IT entities. Last year we worked together to increase the bandwidth between all wiring closets from 100 mb on copper to 1 GB on multimode. We are now looking to update drops to workstations, assist in wiring for the new children's area and troubleshooting issue as they arise as needed.

<u>Parks & Recreation</u>

Parks & Recreation FY2021 – FY2025 Needs: Re-evaluate "Sportsman," and field permitting to determine whether or not these programs should be part of the permitting and licensing system.

Parks & Recreation: The IT Department continues to support the Parks Department's Dudley Road facility, as well as Crystal Lake, Gath Pool and many other buildings enabling the department to provide and manage the many programs, camps, and lessons as effectively and efficiently as possible.

Parks and Recreation will be deeply involved in the selection of a new permitting system.

<u>Historic Newton</u>

Historic Newton FY2021 – FY2025 Needs: Ongoing, quality support as needed.

Jackson Homestead: Since the renovation, the History Museum has had numerous tech upgrades and is currently in very good shape for their data and access requirements. We will continue to monitor and discuss potential future projects.