

City of Ottawa Technology Roadmap

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Introduction

The City of Ottawa is proactively moving towards becoming an eGovernment, a municipality that will be able to meet the challenges of the 21st century. The Five Years Technology Roadmap is the response to the challenge of transforming the way municipal government operates.

Recognizing the importance of the relationship between people, process and technology, the road map aligns with key corporate initiatives including the Service Excellence Plan and the City Strategic Plan. It

will recommend large-scale Strategic Technology Investments that support Citizen Centricity and Governance.

The present document outlines planned key strategic investments and building blocks that position the organization to respond to City of Ottawa business needs and citizen expectations. In order to implement full technology solutions, realize savings and continue to deliver services, significant investment is required in four key areas:

- Specific technology required to enable key Service Excellence initiatives;
- Foundational technology required to support Service Excellence initiatives and reduce the risk of service interruption by modernizing an aging infrastructure;
- Initiatives designed to optimize opportunities to achieve internal efficiencies of the IT environment;
- Ongoing technology to support daily operations.

The cost to implement the Service Excellence initiatives and foundational technology identified in the IT Roadmap is projected to be \$89.7M over 5 years, with total benefits of over \$40M annually from this investment. The net new capital requirements are \$25.7M and are identified in the budget documents (Strategic Initiatives). The IT Roadmap also leverages the IT Asset Renewal Program, reflecting the Long Range Financial Plan (LRFP) and Fiscal Framework, to maintain and/or replace existing capital assets throughout the full life of the asset. The Asset Renewal requirement for 2010 is \$12.335M.

Five-year technology roadmap

When properly planned and implemented, technology can bring substantial benefits in terms of service improvements. The plan identifies key initiatives and building blocks with wide-reaching implications that affect every City department and align with City Strategic Plan priorities by:

- Implementing technology solutions that supports Service Excellence projects;
- Modernizing the network and telecommunications infrastructure and computing environment by implementing virtualized servers, desktop infrastructure (i.e. thin client desktops) and voice-over IP capabilities;
- Consolidating data centres to reduce energy and real estate costs;
- Implementing multi-function devices (printing, faxing, scanning, photocopying) to reduce costs and lower energy consumption;
- Establishing a secure mobile technology platform and infrastructure for those City services that are in the field and require access to information assets; and
- Replacing/upgrading legacy applications and hardware to reduce the cost of supporting older, unsupported technology and minimize the risk of failure or loss of service.

Nevertheless, technology is not the only component when developing cost effective and optimized business solutions and services. In order for technology to deliver to its true potential it must be coupled with right processes and people with the right skills. IT tools merely facilitate and accelerate processes; applying tools to bad process can result in just doing bad things faster. It is the proper confluence of people, process and technology that truly drives innovation. While this plan focuses to a large extent on information management and technology, its success depends on effective and timely partnerships with City business areas that need to develop the right processes and people.

Key drivers

The Five Year Technology Roadmap aligns IT Services with key corporate plans such as the City Strategic Plan and Service Excellence. At the same time, it is a response to many factors identified in the ITS Strategic Plan that drive change and costs for the ITS Department and its clients:

The following guiding principles will be the basis for key decisions:

1. Technology investments should focus on large-scale initiatives capitalizing on existing investments wherever possible, thus yielding the largest return on investment and transforming the way the City's business is done. Prioritize IT investments across the enterprise based on alignment with corporate strategies and plans.
2. Continuously improve and optimize the network, application and hardware infrastructure, within the financial framework, to achieve a fast, flexible, cost effective and sustainable computing environment that meets the client's needs, and to reduce risk of disruptions to City services and impacts on citizens.
3. Provide IT services and capabilities where the workers are, including at the office, in the field, or on the move.
4. Provide access to information in a secure manner and protect personal information.
5. Evolve a standard based technology architecture that is integrated with City businesses, enabling cost-effective evolution of services and infrastructure and connectivity with City residents and business partners.
6. Use strategic sourcing, such as commercial-off-the shelf applications, Application Service Providers, Software as a Service, Open Source, Managed Services and Contracted Services, to reduce labour and support costs.
7. Leverage and capitalize on existing investments in enterprise applications (SAP, MAP/GIS, e-Services, CLASS, etc.) over introduction of new business applications.
8. Emphasize data integration and sharing as a primary strategy for supporting business objectives and containing costs.
9. Greater use of electronic information to conduct day-to-day business and reduce the City's dependency on natural resources.

Key initiatives

The following section describes the proposed initiatives that comprise the Technology Roadmap. They are organized into four themes:

- Service Excellence: specific new technologies enabling key Service Excellence initiatives.
- Foundation Technology: building blocks on which the Service Excellence initiatives are dependent and that need to be in place in order for ITS to effectively and rapidly deploy and support the new technologies.
- Efficiency Projects: investments in new technology that result in operational savings or deferral of capital expenditures.
- Renewal: ongoing lifecycle spending to upgrade/replace existing technology to ensure the City's technology infrastructure supports day-to-day operations.

Service Excellence Initiatives

The City has identified initiatives that leverage technology to improve the way citizens access services from the City. Several initiatives have major technology components (such as enhancing citizen centric services

and creating a community-based mobile workforce), whereas others play a relatively minor role achieving the anticipated results. These initiatives rely on technology to improve service delivery. City staff have spent the last four months working closely with an IBM project team and the City's technology advisor to confirm the scope, as well as the organizational and technology implications, of each of these initiatives.

Enhance citizen-centric services (e-services / 311)

Every year, hundreds of thousands of citizens access City services through 3-1-1 and Ottawa.ca. The centre manages over 600,000 calls per year and responds to requests for information on over 300 municipal topics. Although Ottawa.ca offers significant information to residents, it is difficult to navigate through its 25,000 pages and find information quickly. There are multiple sources of information, which results in staff providing inconsistent or out-of-date information to residents. Citizens expect a service experience similar to what they have with travel, financial, retail and shipping businesses. Citizen satisfaction would increase if all the required information were stored in one place.

As a result, the City is proposing an initiative that will improve how the City engages, interacts with, and provides services and information to citizens. It will simplify the current access points and will make sure there is no wrong door to access City information and services, which will be organized and presented from the citizen's perspective allowing them to find the information they need about City services, register for programs, submit forms, make payments and report and track service requests from the time of report through to resolution (similar to UPS). City staff will have access to the same online technology, which will make them more knowledgeable, engaged, and responsive to client inquiries in a contemporary collaborative environment. Finally, processes and service standards will be standardized across the City providing consistent, predictable, high quality services and information to Citizens. In order to enable this initiative to be successful, certain technical tools are required. The City must implement a customer relationship management (CRM) / knowledge management system. An integrated CRM solution tracks all citizen interactions (both request for information and services), provides 311 call agents with a consistent look and feel, and closed loop service processes between the 311 centre and service departments. A CRM solution includes key technology components including a centralized knowledge repository, computer telephony integration (CTI), business intelligence tools, and an integration framework that allows information to be drawn from multiple operational systems and databases. In addition to CRM technology, the City must invest in business intelligence (BI) tools, which is a set of processes and technologies that provides historical, current, and predictive views of business (i.e., advanced reporting). The value of BI lies in its ability to manipulate data for the purpose of answering business questions in a timely fashion. As a process, BI is the consolidation, analysis, and application of business data to assist business decision-making and yield genuine business value (e.g. by providing strategic insight). As a software application, BI consists of a variety of tools that facilitate BI processes by providing better data, more efficiently, to business decision-makers (e.g. automated analysis and reporting; real-time snapshots of business performance; analytics, dashboards, visualization). The different components of an enhanced eServices/311 system are illustrated in the following diagram.

The total required one-time investment for this initiative is \$39.2M (\$12M in 2010) with ongoing costs of \$2.1M. Annual benefits of \$12.8M for this initiative are fully realized in 2014. This project will pay for itself in 5 years.

Create a community based mobile workforce

The City has a significant workforce (in excess of 12,000 FTEs) consisting of field workers and knowledge workers involved in community-facing work, as well as remote workers (e.g., by-law enforcement officers,

inspectors, public health nurses). With Ottawa being one of the largest geographical cities in the country, staff must be dispersed across the city in order to meet the public demand for timely services. Many field workers have to report to their City office in the morning to obtain daily service orders and then return at the end of the day to write up work summaries. Others return to administrative buildings several times throughout the day. Not only is this inefficient, it results in unnecessary costs for travel to meetings at different locations (e.g. parking and mileage), as well as loss in productivity. This initiative will focus on making staff more accessible to the clients they serve and improving the effectiveness and efficiency of the service delivery processes by equipping staff with mobile devices and tools so that they can deliver a broad range of services on-site and report on the progress of these services as they are being delivered. It will result in staff being able to work closer to the clients they serve. Field workers will be equipped with the appropriate mobile devices and tools that will make them more productive and allow them to focus on their core activities. New requests for service can be assigned to City staff already out in the field resulting in faster response and shorter turnaround time. The City will be able to respond to more requests for service with the same or less staff and will be better positioned to deal with growth. Finally, staff will be able to leverage current, proven technology to work with community groups, Council, managers and colleagues within and across geographic locations. This initiative will require the establishment of more mechanisms to allow secure remote access to critical data, e-mail and enterprise applications. Mobile technology is available in many forms and device configurations and enabled by recent improvements in wireless and cellular technology. Planned advancements in next generation technologies over the coming years will further enhance the possibilities to leverage mobile capabilities. A common, secure and reliable mobility infrastructure provides a platform for the City's mobile workforce. This initiative also incorporates mobile computing projects already underway such as: mobile units for Utility Services, and mobile computing for Fire vehicles. Specifically, the City will have to build a standard and secure mobility infrastructure architecture to facilitate the efficient delivery of services by a large mobile City workforce. The total required one-time investment for this initiative is \$20.9M (\$5.4M in 2010) with ongoing costs of \$3.26M. Annual benefits of \$12.5M for this initiative are fully realized in 2013. This project will pay for itself in 5 years.

Smart Energy

The City spends \$40M annually on energy (Electricity 60%, Gas 19%, Street lighting 11%, Water 10%). In 2002, the City began a program to proactively manage its energy costs, investing millions of dollars in energy reduction measures, such as lighting upgrades and boiler replacements. Approximately \$7.2M has been allocated to capital measures projects between 2002-2009, and a further \$8M in projects has been identified for 2010-2012. This initiative focuses on further reducing the City's annual energy costs by: re-commissioning mechanical equipment to re-establish the baseline for energy performance by bringing equipment back to design specs; implementing an Enterprise Energy Monitoring and Targeting (M&T) solution connected to electrical, gas and water meters to enable managers to have situational awareness and insights into patterns of energy consumption (e.g. automated tools that enable visibility to energy consumption, and that alert on "out of specific" conditions); implementing Integrated Building Management Systems requiring less manual intervention and enable remote command and control; continuing with planned capital measures for 2010-2012 (not included in current capital plans); and implementing a Solar Photovoltaic initiative starting with a Pilot Project – 2- 5kW's (receive a revenue stream from the Ontario Government through the „Feed In Tariff“ (FIT) program. Through the implementation, energy managers will be given energy management and building automation tools that have the potential to reduce energy consumption by 5% – 10% annually. City staff and building managers will have access to real time data to understand energy consumption and therefore, staff will make more intelligent and interconnected energy decisions in order to reduce overall consumption and avoid peak

charges based on utilities providers' pricing and time of use models. The total required one-time investment for this initiative is \$13.96M (\$2.43M in 2010) with no ongoing costs. Annual benefits of \$2.5M for this initiative are fully realized in 2015. This project will pay for itself in 8 years. Technology plays a role in supporting this initiative through the implementation of an Integrated Building Management System (IBMS) and the implementation of a Monitoring and Targeting (M&T) solution.

Transform Fleet Management

Fleet Services maintains more than 2,000 vehicles including fire trucks, ambulances, snowploughs, trucks and cars. They also perform maintenance on all 621 police vehicles (such as cruisers, pick-ups, vans, and motorcycles). The annual utilization of most vehicles falls within expectations, however a significant number of cars are used less than their economical break-even point, and many vehicles have low annual mileage and are only used periodically. There are no performance standards for use of parts and equipment and currently no formal mechanism to evaluate performance of mechanics and other labour requirements. This initiative focuses on transforming the fleet management function at the City. It includes implementing fleet management strategies so that Fleet Services can "right size" the municipal fleet and implement procurement strategies and processes such that the City can move to a standardized vehicle inventory, and migrate to a Green Fleet to reduce fuel costs. It also includes identifying and implementing processes and tools to support operational and maintenance decision-making related to managing the fleet (Leveraging Total Cost of Ownership); implementing preventative maintenance strategies to get the full value out of its vehicles and reduce maintenance costs and implementing strategies to transform the stores inventory processes to ensure the right part is available at the right time. Implementation will result in departments making more efficient use of low mileage vehicles, which will form part of a motorpool that can be shared among departments. Oil changes and other basic maintenance activities will be performed by external vendors which will allow City mechanics to focus on more complex maintenance activities. In addition, turnaround time for maintenance of vehicles and equipment will be faster as a result of performing low complexity repairs at the service department sites. Better communication and integration between Stores and Fleet Services will ensure that the right part is available at the right time and scheduling for maintenance of equipment will be based on proactive forecasting of potential failures. The move to more standardized fleet and equipment will reduce maintenance costs and complexity, and the implementation of a Green Fleet Plan and processes will reduce fuel costs. The total required one-time investment for this initiative is \$2.39M (\$1.75M in 2010) with no ongoing costs. Annual benefits of \$3.9M for this initiative are fully realized in 2013. This project will pay for itself in 3 years. Technology plays a role in supporting this initiative through an upgrade to the M5 Fleet Management System and improving integration with the SAP Financial system.

Optimizing the Utilization of Recreational Facilities

Today, Citizens and community groups are not able to view or book available facilities or ice time online. There is no ability to conduct an online search to view availability of multiple locations at different times or dates. In order to access this information, citizens must contact specific facilities. In addition, several recreation facilities are underutilized due to the lack of amenities to make them more suitable for clients. This initiative involves implementing technology to support real-time search, viewing and online booking of city recreational facilities. This will allow clients to match their requirements for facility rentals with options available across various City venues, including booking of ice time. The initiative also includes capital improvements to the Nepean Sportsplex and the Ron Kolbus Lakeside Centre to improve the space and make it more attractive for rental use. Once in place, these investments will improve the City's ability to market and promote City facilities and to optimize the number of groups or programs that can be

accommodated across City facilities. Citizens will be able to visit the City website to see what sports and recreation facilities and venues are available to them so they can make decisions to meet their recreational needs, and they will be able to search online, locate and book available ice time at different arenas across the City on a real-time basis. In an effort to optimize facility usage, technology will allow citizens to search other venue availability, view facility amenities such as space layout, view daily booking schedules, complete an online reservation request and make online payments. In addition, City staff will have access to the same online technology, which will make them more knowledgeable and responsive to client inquiries. Online booking and registration will be available 24/7. The total required one-time investment for this initiative is \$0.90M in 2010 with ongoing costs of \$50K. Annual benefits of \$0.38M for this initiative are fully realized in 2012. This project will pay for itself in 4 years. Technology plays a role in supporting this initiative through an upgrade to the CLASS booking and registration system to incorporate additional functionality for facility rentals, as well as utilization of some of the upgrade planned for the e-services initiative.

Integrating Community and Social Services Delivery

The realignment initiative brought together Community and Social Services staff and the related infrastructure that previously existed in four separate branches. However, across these programs, some processes, tools, policies, technologies and geographic locations still need to be integrated. Currently, clients have to meet with specialists in each service area and provide them with similar information multiple times as they apply to access various services. Likewise, clients must complete various entry applications that contain similar information to apply for various city and provincial services. Many of the clients have diverse needs over time and require multiple appointments with various City staff to complete provincial requirements. This initiative focuses on implementing the new business model for the Community and Social Services Department to achieve program integration and seamless service delivery. It includes integrating the administration of provincially mandated programs and coordinating supplemental programs offered by the municipality. As a result, services will be easier to find and access, and they will be more coordinated, seamless and tailored to the employment, financial, housing, childcare and long-term care needs of clients. Clients will be able to access required supports through a single point of contact within four service centres and the department will be able to assess clients for a full range of services at one time. In addition, clients will be able to assess eligibility and complete applications online (Province pilot underway). Finally, front-line workers will be better equipped to respond to “at risk” clients at initial intake and will have enhanced accesses to available municipal and community resources to meet client needs. The total required one-time investment for this initiative is \$0.91M (\$0.59M in 2010) with no ongoing costs. Annual benefits of \$2.4M for this initiative are fully realized in 2014. This project will pay for itself in 3 years. Technology will play a role in supporting this initiative through solutions that promote portability, cross program delivery and support. Functionality anticipated in the e-services initiative, as well as planned provincial systems, also play a role. Future IT costs are unknown at this time, but will be identified during the process-mapping phase of the project.

Foundation Technology

The initiatives described in the following section are critical to the delivery of City services and require immediate investment if we are to be successful in implementing a corporate and departmental Service Excellence Program. They are building blocks on which the Service Excellence initiatives are dependent and that need to be in place in order for ITS to effectively and rapidly deploy and support the new technologies:

Server Virtualization

Modernization and consolidation of servers through “virtualization” technology will simplify deployment of new applications and, as an added benefit, reduce long-term lifecycle replacement costs. The overall investment required for this initiative is \$1M in 2010, and will pay for itself in 4 years. Modernization of Telecommunications System Modernization of the City’s telecommunications systems, specifically to address computer telephony integration (CTI) required for 311 and the community-based workforce. The overall investment is \$6.6M over 5 years, and will pay for itself in 10 years. This project has previously been approved and no capital funding is required in 2010.

Data Storage

A Data Storage Strategy is required to address the anticipated high demand for data storage driven by the Service Excellence initiatives and growth in structured and unstructured data. The overall investment is to be determined, but an initial investment of \$75K is needed in 2010 to examine technology options and plan a multi-year budget. Virtual Desktop Infrastructure (VDI) Virtual Desktop Infrastructure (or “thin client”) is technology that would allow ITS to deploy new software/applications to the desktop more rapidly and efficiently. The overall investment is \$1.1M over 3 years, with an initial investment of \$225K in 2010 to examine technology options and plan a multi-year budget.

Enterprise Architecture

Enterprise Architecture is needed to plan and design how all the technology components fit together, which are reusable, and what will the overall technology environment look like when built/developed. The overall investment is \$500K in 2010 to establish a well-defined framework and enterprise model, lifecycle process and governance, acquire architectural tools and train staff on the methodologies and tools.

Efficiency Initiatives

In addition, to enabling and supporting specific Service Excellence initiatives, specific investments have been identified that can leverage the current situation in Ottawa from a technology modernization perspective, to enhance the cost and effectiveness of City operations. These include:

Consolidating Data Centres:

In 2008, an independent assessment identified the opportunity and feasibility to consolidate two of the City’s four data centres, thereby returning space to the corporation and reducing facility operating and lifecycle costs. The overall investment is estimated at \$400K, which will pay for itself in 4 years, based on vacating facilities at 1500 St. Laurent and 101 Centrepointe Drive.

Consolidating Printing Devices

The City’s current fleet of copiers, printers, scanners, and fax machines should be migrated to new single Multi-Function Device (MFD) technologies, which will streamline administration and management for support and maintenance. The overall investment is \$400K over 2 years, with an initial investment of \$300K in 2010. The project will pay for itself in 3 years.

Consolidating Desktop Software Solutions

There are over 700 different and multiple versions of desktop software supported by ITS. Consolidating to common versions and standards will require an investment of \$560K over 3 years, with an initial investment of \$500K in 2010. The project will pay for itself in 5 years.

IT Infrastructure Lifecycle Renewal and Sustainment

IT Services supports and maintains the computing infrastructure on behalf of the City. This includes both hardware and software.

Technology Infrastructure

Technology infrastructure includes the City's desktop computers, laptop computers, servers, and related networking equipment and software on which City departments use on a daily basis to deliver public services.

Software and Application Renewal and Sustainment

Ongoing upgrades to existing enterprise and business systems are required to ensure the current investments are not allowed to become obsolete and continue to be supported by vendors.

Financial Summary

Investment Type	Total 5-yr Investment (\$000)	Anticipated Annual Benefits (\$000)	2010 Capital Req't (\$000)	Capital Funding Source
Service Excellence Initiatives	\$79.0	\$43.15	\$23.7	Strategic Initiative
Other Technology Roadmap Initiatives	\$10.71	\$1.30	\$2.00	Strategic Initiative & Asset Renewal
Sub-Total	\$89.71	\$44.45	\$25.7	
IT Asset Renewal			\$12.335	Asset Renewal

Conclusion

To make eGovernment a reality requires modernization of the internal operations of the City's technology infrastructure. Much of this re-design work is, and will remain, invisible to the general public. More visible will be the adoption of eGovernment Technology Initiatives by the City's service delivery units. Through the strategic application of information technology, the City will provide seamless, efficient and effective service and provide better value to Ottawa taxpayers and business partners. The Five Year Technology Roadmap positions the City of Ottawa for the transition to eGovernment by identifying investments that:

- Modernize its technical foundations to support speed of implementation for new systems and application;
- Enable more strategic use of information technology throughout the City's workforce; and

- Support the people and businesses of Ottawa. Our goal is to contribute to ensuring that Ottawa is the best place to live, learn, work, do business and visit.