City of Ottawa

Technology Roadmap

October 2009

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Executive Summary

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 and deliver on Council's commitment to Service Excellence. The Five Year Technology Roadmap is a response to the challenge of transforming the way municipal government operates. Recognizing the importance of the relationship between people, process and technology, it aligns with key corporate initiatives including the Service Excellence Plan and the City Strategic Plan.

In keeping with the key themes of 'Changing The Conversation; Report from the Mayor of Ottawa's Taskforce on eGovernment', this plan recommends large-scale Strategic Technology Investments that support Citizen Centricity and Governance.

This 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; and
- Ongoing technology to support daily operations.

The Roadmap identifies a series of investments highlighting for each, where applicable:

- The return expected;
- The investment required;
- The cost of not investing; and
- A timeline for both the return and investment.

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 2010 net new capital requirements are $25.7M and are identified in the 2010 budget documents (Strategic Initiatives). The IT Roadmap also leverages the 2010 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.

1.0 Five Year Technology Roadmap

When properly planned and implemented, technology can bring substantial benefits in terms of service improvement and efficiencies.

The goal of this document is to provide Council with a proposed direction for information technology at the City of Ottawa. 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.

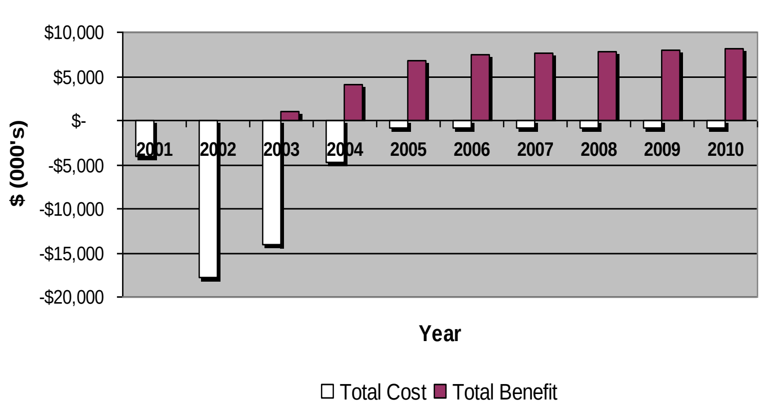
In order to implement full technology solutions, realize savings and continue to deliver services, significant investment is required in four key areas:

- 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; and
- Ongoing technology to support daily operations.

2.0 Scope

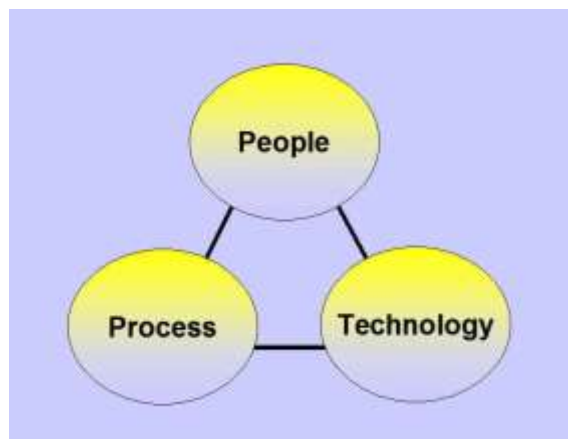
In the same way that sewers, roads and bridges serve as the infrastructure to support the movement of goods, people and the delivery of essential services, the City's IT infrastructure supports the people, processes and technology required to deliver all services.

Amalgamation was the catalyst for significant investments in information technology between 2001 and 2004. The new systems and technologies were major contributors to the City's ability to manage amalgamation and achieve its objectives. For example, the "Integrated Business System" project invested an initial $39m in new technology that established a foundation for integration of data and information to enable a "total picture" view that supports Council decision-making, and has resulted in total projected benefits of nearly $50m by 2010.



While benefits from investment during amalgamation were significant, they have been fully "harvested". An infusion of funding at a similar level is necessary to achieve further benefits.

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 the right *processes* and *people* with the right skills.



Technology 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.

3.0 GUIDING PRINCIPLES

The Information Technology Services Department is guided by a set of principles that inform the outlook and approach to the deployment of IT resources. While our operational planning may be dynamic, the following guiding principles remain the same and are 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 standards 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.

4.0 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 Technology Roadmap positions ITS to manage these challenges as they arise by anticipating and planning for their inevitability.

5.0 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.

5.1 Service Excellence Initiatives

The City has identified nine (9) 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.

Although there are investments required to implement these initiatives, all are based on sound business cases that show a positive return on investment.

The total investment required to implement the Service Excellence Initiatives is $79.0M over 5 years, with $23.74M required in 2010.

Enhance citizen-centric services (e-services / 311) (Document 2)

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.

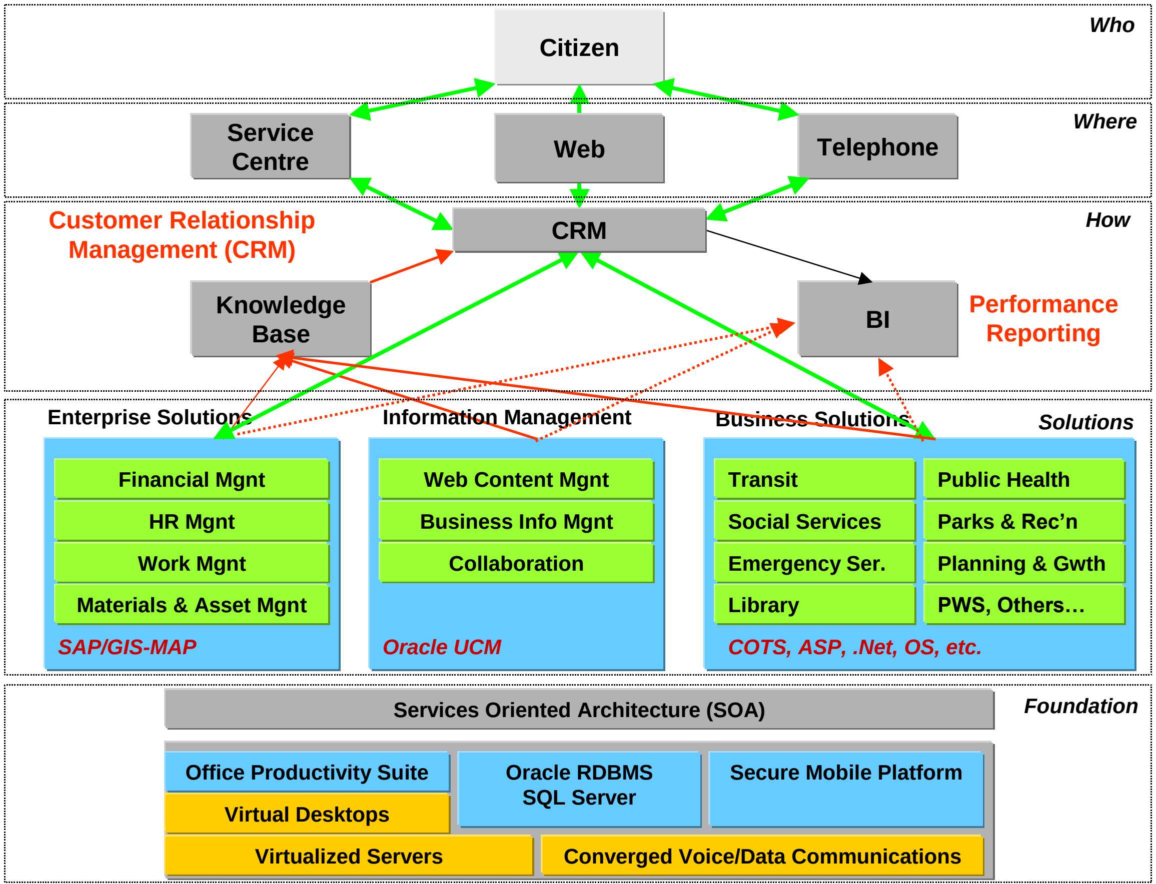
Citizens expect a service experience similar to what they have with travel, financial, retail and shipping businesses. Citizen satisfaction would increase if all the required information were stored in one place.

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.



Although 311 is typically viewed as a contact centre and point of citizen access, it is quite dependent on municipal departments for information and service request fulfillment, supported by a robust and reliable technical infrastructure.

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 (Document 3)

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 (Document 9)

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 roll 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.

Sponsorship and Advertising (Document 10)

81% of municipalities are involved in some form of sponsorship engagement. In Ottawa, sponsorship and advertising is already an integral part of the business plans of many City programs and services. In 2008, combined revenues from both sponsorship and advertising have been in the range of $5M. However, the City lacks a coordinated approach to soliciting sponsorship and advertising opportunities, which results in missed opportunities to maximize revenues. Each department is responsible for pursuing its own sponsorship agreements (currently 100 in existence), which results in multiple departments contacting the same sponsor. As well, each department uses different tools for tracking sponsorship initiatives. Despite the recent economic turmoil, corporations are still willing to invest in sponsorship.

This initiative involves the development of a comprehensive sponsorship and advertising framework to pursue additional sources of revenue from City assets and facilities. The project will explore revenue opportunities from naming rights, advertising (interior signage, publications, Ottawa.ca website), program sponsorships with defined audience segments, and OC Transit station sponsorships, as well as the continuation of the current billboard advertising program. This initiative will also establish a centralized sponsorship office that will set the overarching corporate approach to sponsorship, provide assistance to departments on complex projects and negotiations, and create a single point of contact for potential sponsors or partners.

By taking a strategic and coordinated approach to sponsorship, departments will have the ability to collaborate with each other and learn more about potential sponsor opportunities for their programs. As a result, the City will maximize sponsorship revenues without causing donor fatigue from multiple approaches to the same sponsor.

In addition, valuation of sponsor benefits will be coordinated and standard benefits will be established. Likewise, sponsorship and advertising revenues will be logged and tracked using consistent tools and practices and the centralized sponsorship office will actively promote and monitor adherence to sponsorship policies and procedures.

The total required one-time investment for this initiative is $0.27M in 2010 with ongoing costs of $0.93M. This project will pay for itself in 1 year.

Technology plays a role in supporting this initiative through the development of a sponsor benefit tracking tool (database), updates to the City website as well as improvements planned in the e-services initiative.

In addition to the corporate initiatives that require technology to enable their success, various departmental initiatives identified in the Corporate Service Excellence Plan also rely on a technology foundation to support their success.

Transform Fleet Management (Document 4)

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 fall 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 (Document 5)

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 on-line 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 (Document 6)

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.

Innovative Management, Operating and Business Practices (Document 7)

The 2009 realignment resulted in a new organizational structure, clear service mandates and associated lines of business accountability in Public Works, such that services are grouped in ways that make sense to citizens and are easier to access. There is a growing demand for public works services caused by an aging and expanding infrastructure. In 2009, the department brought into service 175km of roadways, 25km of sidewalks, 10,000 trees, and 46 ha of parkland. Ottawa’s infrastructure is aging and has not kept pace with the required operating, maintenance and lifecycle requirements. Routine maintenance scheduling is reactive, and work prioritization is determined largely on public complaints and requests for service records. As well, there is limited advancement in the development of maintenance standards, standard operating procedures and quality assurance programs.

This initiative involves the engagement of staff at all levels to identify and implement innovative strategies that lead to efficient and effective delivery of services. The initiative will use a structured framework and approach, which engages employees in a process of identifying innovative management, operating and business practices to improve performance and reduce costs.

As a result, Public Works will be able to accommodate projected growth targets for the maintenance of roadways, sidewalks, trees and parkland with potentially less new staff than would otherwise have been required. Acceptable standards of work and standard operating procedures will be developed, documented and communicated, and savings will be achieved by delivering services in a different way at a lower cost, eliminating unnecessary and duplicate work.

The total required one-time investment for this initiative is $0.51M ($0.31M in 2010) with no ongoing costs. Annual benefits of $1M for this initiative are fully realized in 2012. This project will pay for itself in 2 years.

The IT requirements to support this initiative have been identified in two other initiatives that are part of the Service Excellence Program – Enhance Citizen-Centric Services and Create a Community Based Mobile Workforce.

Casual Labour Pool (Document 8)

Public Works currently uses a combination of in-house resources with contract agencies to provide maintenance activities for roads, sidewalks, parks, buildings, trees, and facilities, and they make use of temporary staff, students and contracted services to supplement the work of absentee full-time staff. Work that is seasonal, sporadic, labour intensive or event-specific is contracted out through a competitive bidding process. Each year, Public Works spends millions of dollars in overtime costs to ensure adequate service levels, and the use of contractors to maintain city roads (e.g. snow removal) further increases the City's costs to provide these services.

This initiative focuses on the creation of a casual labour pool to reduce the City's use of contractors and provide timely access to resources to meet peak demands. The labour pool is expected to help optimize equipment usage, reduce overall costs and improve services.

As a result, managers will have access to casual workers to replace regular employees who are absent from the workplace, or to meet operational peak demands and/or other operational needs. By using trained personnel from a labour pool to perform public work activities, staff will be able to optimize the use of City owned/leased equipment, as well as retain knowledge and experience by retaining an experienced workforce on a casual basis. New hires or replacement requirements could be promoted from the casual labour pool resulting in timely filling of vacancies, as well as assist the City in its retention and succession planning by having qualified pool of candidates available to fill future permanent vacancies. Furthermore, it will increase staff productivity and performance, as well as improve communication between workers, the Union, and management, which will provide greater opportunities to contribute recommendations for improvement in service delivery, equipment usage and staff deployment models.

There are no costs associated with this project. This project will rely on existing enterprise systems.

5.2 Foundation Technology, Efficiency and Infrastructure Initiatives

In addition to the Service Excellence initiatives, the Technology Roadmap includes Foundation Technology, Efficiency and Infrastructure Lifecycle and Renewal initiatives. The investment required to implement these initiatives is $10.71M over 5 years, with $2M required in 2010. The IT Roadmap also leverages the 2010 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.

Detailed descriptions of these initiatives can be found in Section 9.

5.21 Foundational Technology Initiatives

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.

5.22 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.

5.23 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.

6.0 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

7.0 Risks Going Forward

The direction and building blocks needed to make Service Excellence a reality represent a significant investment in technology, people and process, and will challenge the City's capacity and ability to execute.

Moreover, the need to control the technical complexity of the IT environment by moving towards larger, single corporate solutions will challenge the organization and the IT Services Department.

8.0 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.

9.0 Initiative Descriptions

Server Virtualization

Capitalize on virtualization technology to reduce the server fleet size by 260 servers over 3 years.

The City owns a fleet of over 300 servers, operating as distinct stand-alone computers. The computer industry has new solutions that have the capability to consolidate stand-alone servers through virtualization technology. An assessment in 2008 determined that 260 servers could be replaced with 15 "virtualized" servers.

Return Expected:

The 3-year program would yield the following returns:

- Estimated annual power savings of $34K (operating power by 103.6 kWatts, cooling power by 129.5 kWatts, and data center footprint by 3,219 square feet).
- Carbon emission reduction of 2,731,394 lbs. (1,239 tons), the equivalent to average emissions of taking 228 cars off the road per year.
- Reduce future capital expenditures of approximately $600K. (Note: since the City does not purchase maintenance on the servers, there is no immediate operational savings).

Other operational benefits include improving service and reducing the overall complexity of the server environment by simplifying system management, improving the delivery time for new and updated applications by eliminating the time needed to procure, install, and configure servers (i.e. rapid deployment), improving disaster recovery and reducing the risk/cost of lost productivity.

Investment:

Financial Summary

5-Year Analysis		Year 2010	2011	2012	2013	2014
Total Cost of Project	$1,000,000	$1,000,000	$0	$0	$0	$0
Total Benefits	$1,315,000	$0	$130,000	$195,000	$795,000	$195,000
		-$1,000,000	$130,000	$195,000	$795,000	$195,000
Cumulative Net Benefits (NPV)	$315,000	-$1,000,000	-$870,000	-$675,000	$120,000	$315,000
Payback Period (years)	3.85	Average Annual ROI	6%			
Payback (year)	4					

Cost of Not Doing:

Fleet of servers will continue to grow to keep pace with application growth and demand, Cost of support and lifecycle replacement will continue to grow.

TELECOMMUNICATIONS SYSTEMS MODERNIZATION

Provide a sustainable voice communications infrastructure for the delivery of City services and public interaction.

The current communications infrastructure includes tow voicemail systems and several telecom application packages for recorded announcements, voice response, and call centre operation. The telecommunications industry is phasing out traditional technologies and moving to converged voice and data communication through Voice-over-Internet Protocol (VOIP).

VOIP is also a digital technology infrastructure solution that provides a foundation on which to integrate voice and data, and that can be leveraged to improve customer interaction and service, productivity, and new applications. The City does have immediate operational needs, including replacement of an end-of-life' voice mail system and telephony for new buildings/facilities. This technology lays the foundation for the feature capabilities, such as single dialling plan for all sites, web/video/teleconferencing, integrated call centres, 311 enhancements, unified communications and many others that are required to provide effective and efficient services.

RETURN EXPECTED:

Reduces voice/data communications circuits' monthly charges and reduced maintenance contracts by $800K annually.

Reduces risk and cost of downtime resulting from failure of existing systems or components.

Foundation for advanced telephony-based applications including call centres, unified messaging, and video/audio conferencing.

INVESTMENT:

Financial Summary

5-Year Analysis		2010	2011	2012	2013	2014
Total Cost of Project	$6,600,000	$3,300,000	$3,300,000			$0
Total Benefits	$2,680,000	$0	$280,000	$800,000	$800,000	$800,000
		-$3,300,000	-$3,020,000	$800,000	$800,000	$800,000
Cumulative Net Benefits (NPV)	-$3,920,000	-$3,300,000	-$6,320,000	-$5,520,000	-$4,720,000	-$3,920,000
Payback Period (years)	9.90		Average Annual ROI	-12%		
Payback (year)	10					

COST OF NOT DOING:

Current PBX technologies are reaching the end of supportable life. This will cause increased downtime and can only be maintained with the use of used parts or new purchases.

Lost opportunities to capitalize on technology features for services such as 311, unified communications, etc.

DATA STORAGE MODERNIZATION:

Develop a strategy that provides an optimum storage infrastructure that meets the current and planned high demand as a result of corporate business priorities.

The current data storage strategy is over 8 years old, based on a centralized storage network infrastructure that physically spans data centres and that can be shared among many applications.

Adequate capacity, security (backup), performance and reliable access are key factors in the design of the storage strategy.

Industry trends and business planning predicts that demand for data storage will grow 8% to 10% in 2010 and more in the future as the requirement to manage rich media (images and video) drives capacity requirements upwards.

RETURN EXPECTED:

The strategy will identify whether the current Storage Network Infrastructure (SNI) will meet the anticipated demand and identify options and alternatives to achieve an optimum storage infrastructure that is:

- Flexible and Scalable - By separating the storage from the servers, this network facilitates the expansion of servers, storage, and applications across the enterprise.
- Centralized Data Management - Configuration and monitoring can be done through a centralized console.
- Economies of Scale - Centralized storage devices can be shared cost effectively among many servers.
- High Performance - Multiple segments of the storage network can be aggregated to achieve higher bandwidth and performance.
- Simplify Support - Disk space can be added and removed from single point of control without impacting the server operation.

COST OF NOT DOING:

Storage infrastructure will become obsolete and not meet the future data storage requirements.

INVESTMENT:

Investment required to perform a review and develop an updated strategy is $75K in 2010. The strategy is expected to incorporate cost/benefit analysis of the newest storage saving technologies such as de-duplication and data compression.

VIRTUAL DESKTOP INFRASTRUCTURE

Implement Virtual Desktop technology on desktop computers.

Desktop computers must be configured differently in response to business needs, resulting in resource costs to set-up and manage multiple and complex configurations or "images". In many cases, changes to install/update software or configurations require site visits by IT staff. A virtual desktop infrastructure (VDI) allows for centralized management, easy recovery and replacement of machines, centralized capability of shutdown or restart remotely. The CPU/hard drive is removed and processing is done at the data centre on a large server.

Virtual or thin client computing is not feasible across all business functions. This program will investigate/identify potential VDI solutions with the objective of establishing a VDI corporate solution.

RETURN EXPECTED:

The initial pilot will assess the extent to which VDI benefits can be realized and quantified. Industry estimates suggest that this technology can reduce lifecycle hardware replacements costs significantly. In addition, benefits can be expected in the following areas:

- More rapid deployment of desktop services to the user;
- Reduce capital costs;
- Reduce IT support and lifecycle costs; and
- Reduce power consumption and lower power usage/cost at the desktop computing.

INVESTMENT:

An initial investment of $225K is proposed to plan and pilot VDI in 2010, confirm anticipated benefits and a multi-year budget.

Financial Summary

5-Year Analysis		Year				
		2010	2011	2012	2013	2014
Total Cost of Project	$1,135,000	$225,000	$490,000	$420,000	$0	$0
Total Benefits	$1,600,000	$0	$400,000	$400,000	$400,000	$400,000
		-$225,000	-$90,000	-$20,000	$400,000	$400,000
Cumulative Net Benefits (NPV)	$465,000	-$225,000	-$315,000	-$335,000	$65,000	$465,000
Payback Period (years)	3.84	Average Annual ROI	8%			
Payback (year)	4					

COST OF NOT DOING:

Cost to procure, deploy and support and lifecycle desktop infrastructure will continue at current levels, and increase over time as additional computers as needed for staff.

Enterprise Architecture

An effective Enterprise Architecture (EA) program provides a structured business approach for aligning technology programs with Council's vision and the City's business strategies to optimize the City's return on technology and information investments, and is key to the long-term success of information technology.

Architecture efforts are currently varied across the organization. Major technology investments are more effectively planned, budgeted and prioritized within a coordinated and managed EA program.

The key principals and objectives of an Enterprise Architecture program are:

- Increase IT alignment with the business as a whole;
- Control costs by reducing duplication of systems and data; and
- Apply standard components as a preference over unique organization-created standards.

The projected investments in information technology beginning in 2010 require that the resulting solutions be "architected" and planned so that they are integrated, standardized, and reusable for the Roadmap initiatives.

Return Expected:

The establishment of an open architecture will reduce the City's suite of technologies in the long term, with a subsequent ability to control costs associated with maintenance and support.

Reuse and capitalization on existing solutions will increase as solution architectures are designed with modern methodologies and processes.

Provide Council and the City with a pragmatic, value-based representation of a "future state" for information technology, and the plan to achieve it.

Investment:

An initial investment of $500K is required 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.

Cost of Not Doing:

Continued expansion of the suite of supported software and hardware solutions driving maintenance and support costs up will occur.

DATA CENTRE CONSOLIDATION

Consolidate the current four (4) data centres down to two (2) by vacating 1500 St. Laurent and 101 Centrepointe sites.

As a result of municipal amalgamation and the outcome of the Corporate Accommodations Master Plan (CAMP) initiative, the City has four data centres. In 2008, an independent assessment identified the opportunity and feasibility to consolidate to two data centres, based on vacating the facilities at 1500 St. Laurent and 101 Centrepointe Drive.

RETURN EXPECTED:

Consolidation will yield 'cost avoidance' returns that are in the following areas:

- Return of space to the corporate landlord of 1200 sq. ft. at St. Laurent and 360 sq. ft. at Centrepointe), potentially avoiding real estate costs of $40K per year (includes voice/data circuits).
- Reduced lifecycle facility maintenance costs regarding power (UPS, A/C, Power Distribution Units, Fire Suppression Systems).

INVESTMENT:

Investment required for implementation is $400K. The major components of this cost include design and project management fees, architectural/structural, mechanical, electrical work in addition to new equipment such as server racks.

Financial Summary

5-Year Analysis		Year 2010	2011	2012	2013	2014
Total Cost of Project	$400,000	$400,000	$0	$0	$0	$0
Total Benefits	$640,000	$90,000	$100,000	$150,000	$150,000	$150,000
		-$310,000	$100,000	$150,000	$150,000	$150,000
Cumulative Net Benefits (NPV)	$240,000	-$310,000	-$210,000	-$60,000	$90,000	$240,000
Payback Period (years)	3.40	Average Annual ROI	12%			
Payback (year)	4					

COST OF NOT DOING:

City will need to immediately upgrade and replace fire suppression ($50K) and other specialized equipment.

DOCUMENT OUTPUT DEVICE CONSOLIDATION

Consolidate copiers, printers, scanners, and fax machines to new single Multi-Function Device (MFD) technologies, and streamline administration and management for support and maintenance.

Printing, copying, scanning and faxing are essential basic operational tools for any organization. An assessment of the current printing environment has demonstrated that consolidating administration and support for all devices, implementing new faster and larger capacity printers and Multi Function Device (MFD) technology, deploying web-based fax desktop software, supported by printing management software, will reduce the overall cost of these tools.

RETURN EXPECTED:

Net annual savings are estimated at $200K, based on a reduction of 1,275 devices/machines and associated consumables, lease costs and operational support components.

Other benefits include enhanced features and capabilities including speed, document security, improved output quality, reduced power consumption, real estate savings and greater convenience/productivity.

INVESTMENT:

Financial Summary

5-Year Analysis		Year				
		2010	2011	2012	2013	2014
Total Cost of Project	$400,000	$300,000	$100,000	$0	$0	$0
Total Benefits	$810,000	$55,000	$155,000	$200,000	$200,000	$200,000
		-$245,000	$55,000	$200,000	$200,000	$200,000
Cumulative Net Benefits (NPV)	$410,000	-$245,000	-$190,000	$10,000	$210,000	$410,000
Payback Period (years)	2.95	Average Annual ROI	21%			
Payback (year)	3					

COST OF NOT DOING:

Maintenance and support costs to maintain aging equipment are expected to rise on a per/unit basis.

DESKTOP SOFTWARE SOLUTIONS LIFECYCLE

Consolidate and reduce the total number of obsolete packaged desktop software solutions and transition to newer current supported versions.

The city workforce uses over 700 desktop software solutions or multiple versions of the same application, with the number steadily increasing each year. Many older versions have reached 'end of technical life' and no longer run on current or future operating systems (i.e. Windows XP/Vista/Windows7). Collaboration and information exchange is more difficult, and the cost to support multiple types and versions of desktop software across the enterprise can be significant.

RETURN EXPECTED:

By consolidating and reducing the total number of old or obsolete packaged software solutions, the annual resource effort to acquire, deploy, support or assist users will be reduced by an estimated 5%.

INVESTMENT:

Financial Summary

5-Year Analysis		2010	2011	2012	2013	2014
Total Cost of Project	$560,000	$500,000	$60,000	$0	$0	$0
Total Benefits	$675,000	$75,000	$150,000	$150,000	$150,000	$150,000
		-$425,000	$90,000	$150,000	$150,000	$150,000
Cumulative Net Benefits (NPV)	$115,000	-$425,000	-$335,000	-$185,000	-$35,000	$115,000
Payback Period (years)	4.23	Average Annual ROI	4%			
Payback (year)	5					

COST OF NOT DOING:

Continued increase in software versions across the city places increasing resource effort to support and maintain.

Increases complexity of desktop hardware/software environment - older versions of software constrains the ability to upgrade hardware to current operating system environments.

Increased risk of data loss through incompatibility between current and older, unsupported versions of software.

TECHNOLOGY INFRASTRUCTURE

Upgrade and replace technology infrastructure used by City departments in accordance with the Long Range Financial Plan and fiscal framework.

ITS manages nearly 500 servers and over 10,000 computers and other devices, networked at 320+ sites around the City including administration buildings, fire stations, libraries, community centres, client service centres, and public works yards.

The average lifespan of computer equipment is typically less than 6 years – as it reaches "end of life", it must be either upgraded or replaced in order to continue to operate. As an asset, industry best practice is to systematically replace equipment before the normal "end of life" in order to minimize the probability of failure, and to avoid increasing future maintenance and support costs.

Since 2003, the amount of funding available to replace aging equipment has been approximately 75% of what is recommended to sustain the infrastructure (i.e., the "gap" between what is needed and what the City can afford).

INVESTMENT:

Investments in IT infrastructure renewal in 2010 total $5.2M and include:

- Network infrastructure ($1.975M); and
- Desktop computers and peripherals ($3.435M).

COST OF NOT DOING:

A significant proportion of the City's current technology was acquired during amalgamation, and is either at, or near, "end of life". Deferral of technology infrastructure replacement results in an increased probability of failure of systems and impact on the internal and external services that depend on technology:

- Lost opportunity to realize operational efficiencies from newer technology (lower power consumption, lower support costs, increased security).
- Growing technology infrastructure deficit (estimated to be $8.7m by 2010).

APPLICATION SUSTAINMENT

Upgrade and maintain enterprise and business applications used by City departments in accordance with the Long Range Financial Plan and fiscal framework.

ITS inherited over 1200 applications following amalgamation. Since that time, ITS has worked at standardizing, eliminating and consolidating these systems, and currently supports mission critical enterprise systems such as SAP, GIS/MAP, the city website, and approximately 59 business suites (groups of applications / tools that together meet a business requirement or function) and 235 independent applications - all providing capabilities for staff to access information and enable the City to transact business with its citizens and businesses.

Over time, software must be upgraded to remain current with underlying operating systems and components, and to ensure vendor support is maintained.

INVESTMENT:

Investments to sustain the current IT application environment 2010 total $4.910M, and include:

- Enterprise systems, including SAP, MAP/GIS, web services, etc. ($4.465M); and
- Other ($0.45M).

COST OF NOT DOING:

Not sustaining the existing enterprise system results in an increased probability of failure of systems and impact on the internal and external services that depend on technology.

APPLICATION RENEWAL

Replace/upgrade legacy applications software that have reached their end of viable life but are still required for city service delivery.

The Information Technology Services Department currently supports approximately 440 business applications that are integral to the City's service delivery. Approximately 100 of these are legacy applications that have reached the end of their viable 'life' and are still in use across the City. The urgency of renewal is based on a number of factors including: lack of technical, vendor and internal resources to support; inability to adapt the application to support current business needs; lack of compatibility with current technologies and infrastructure; and risk of unscheduled downtimes or failures that could impact service delivery and performance.

RETURN EXPECTED:

Migrating legacy applications to new technology solutions will:

- Contain or reduce the cost of supporting the overall portfolio of business applications;
- Reduce the complexity of the application environment by consolidating where possible and/or migrating to existing technology solutions (e.g., SAP); and
- Increase the stability and flexibility of existing and legacy applications and improving the responsiveness of IT to new business requirements.

INVESTMENT:

This program represents a $5M investment over 3 years to transition high priority applications. The program will pay for itself in 5-6 years. Investments in application renewal in 2010 total $1.2M.

COST OF NOT DOING:

Support costs (time spent troubleshooting or resolving user issues) will continue to grow and divert resources from higher value activities.

Increased risk of unplanned failures and downtime for these applications that affect the ability of the business unit to deliver services to the public.

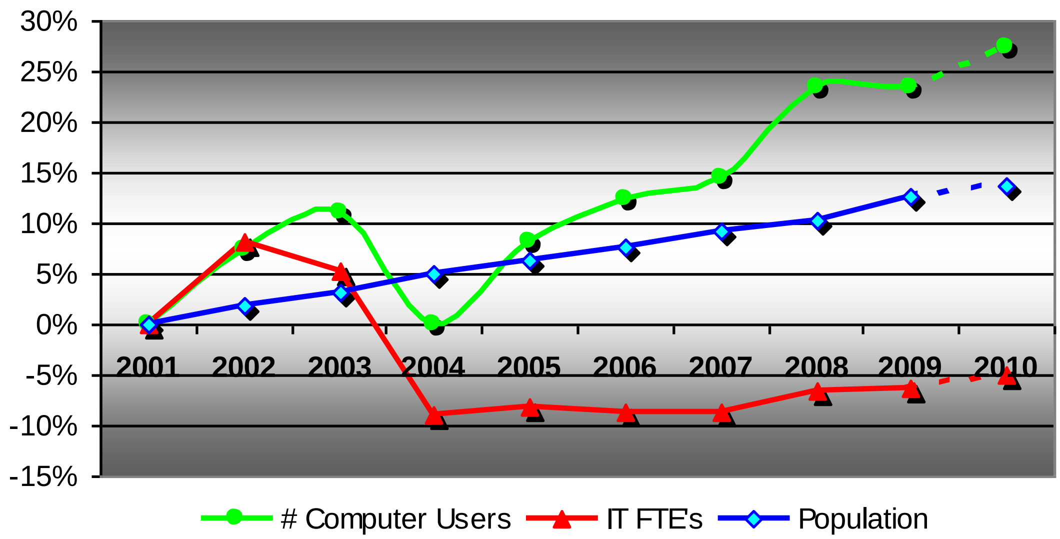
Appendix 1 – Current IT Landscape

The IT Services (ITS) Department provides Information Management and Technology services to support the core business operations and priority agenda items for the Corporation of the City of Ottawa. What this means in real terms is the management, maintenance and renewal of:

- 10,000 user accounts
- 78.3 million emails
- 7.5 million visits to Ottawa.ca
- 325 networked City business sites
- 89,000 Service Desk calls
- 7000+ desktop computers
- 1100+ laptop computers
- 600+ public library terminals
- 360 Intel servers
- 120 Unix servers
- 1300+ printers
- 700+ PDAs (e.g. Palms)
- 440 business applications like SAP, HIFIS, Integrated Library System
- Over 700 desktop applications like MS Office applications, Adobe Reader, Web browsers, photo and video editing software, and decision support tools

Human Resources

ITS has been able to apply process and technology efficiencies to its own operation, while City FTEs and the number of computer users has continued to grow. The number of staff required to support this growth has declined overall and remained relatively stable since 2004.



ITS Department Staffing; ITS is not growing

According to industry analyst Gartner Inc., City of Ottawa IT staff support nearly twice as many clients as their peers. The department's current full-time employee count shows a 1:36 IT/client support ratio, as compared to a 1:20 ratio for peer IT organizations.

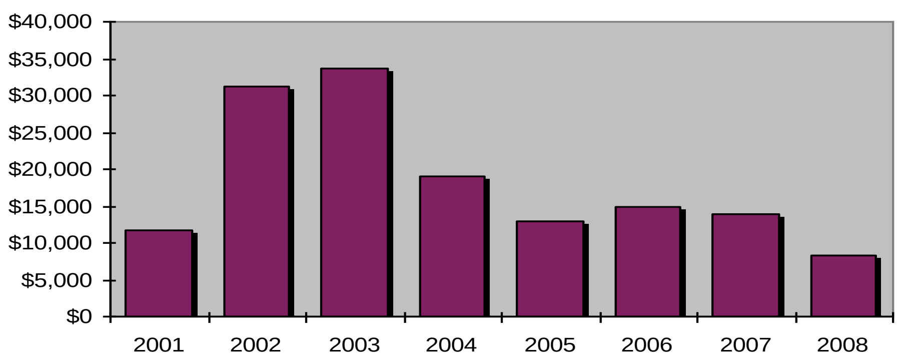
Despite the imbalance in support requirements and resource base, benchmarking (against organizations similar in size and complexity) reveals the following:

- IT Services Department total cost of ownership (TCO) has declined every year since 2003;
- Data Centre operations show that comparable services at the City are 30% less costly (2007);
- Help Desk reflects operation at 21% below cost of comparative peer group (2008); and
- IT Services full-time employee count declined from 392 FTEs in 2002, to 336 FTEs in 2009. At the same time, there has been a 24% increase in the number of computer users.

Technology Investment

Since 2004, technology investment at the City has been characterized by conservative spending on lifecycle replacement and accommodation for growth in the number of locations and users. As a result, no major improvements to service or savings were realized during this period. And, while historical performance measures (such as budget/expenditure, staffing ratios, "total cost of ownership") have highlighted the fact that information technology is being managed and supported efficiently, this minor investment added to the ongoing cost structure and complexity of support. The Mayor's Task Force noted that this was "treating information technology as an expense to manage on an annual basis", rather than a long-term investment in productivity and service improvement.

Post amalgamation investment in IT has declined significantly since 2003



Benefits from investment during amalgamation were significant, but have been fully "harvested". An infusion of funding at a similar level will be needed to achieve further benefits.

Process Investment

Since 2001, IT Services has investment in continually improving its operational processes as a means to deliver better service but also to remain as efficient as possible. This has included adoption and implementation of industry best practice frameworks, such as CobIT (Control Objectives for IT), Information Technology Service Management (ITIL), Portfolio Value Management (IT Governance Institute), and ISO 17999 Security Standards.

Awards and Recognition

The City of Ottawa has received recognition from international, national and provincial peer groups:

Computerworld Honours Program

- Selected as a 'Laureate' for OC Transpo SmartBus project (Washington DC) in 2009.

Government Technology Exhibition and Conference - GTEC

- Honouree (Development Application Search Tool & Interactive Traffic Map) in 2009.
- Two Gold medals (eFootprint on Ottawa.ca and SHAMIS) and two Bronze medals (Spotlight and Ottawa.ca usability and accessibility) in 2008.
- Chosen as the Showcase municipality in 2001 and 2007.

Municipal Information Systems Association of Ontario - MISA

- Excellence in Municipal Systems Award 2005 for MAP-GIS.
- Special Recognition Award 2005: Annual MISA IT Security Conference.
- Excellence in Municipal Systems Award 2009 for the Development Application Search tool.