Report to
Rapport au:

Information Technology Sub-Committee
Sous-comité de la technologie de l'information
31 March 2016 / 31 mars 2016

Finance and Economic Development Committee
Comité des finances et du développement économique
3 May 2016 / 3 mai 2016

and Council
et au Conseil
11 May 2016 / 11 mai 2016

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File Number: ACS2016-COS-ITS-0001

SUBJECT: Application Portfolio Management - Framework for Managing Legacy Technologies

OBJET: Gestion du portefeuille d'applications – Cadre de référence pour la gestion des technologies désuètes

REPORT RECOMMENDATIONS

That the Information Technology Sub-Committee recommend that the Finance and Economic Development Committee recommend that Council approve the Application Portfolio Management framework as outlined in this report.

RECOMMANDATIONS DU RAPPORT

Que le Sous-comité de la technologie de l'information recommande au Comité des finances et du développement économique de recommander à son tour au Conseil d'approuver le Cadre de référence pour la gestion des technologies désuètes, comme le présente ce rapport.

BACKGROUND

At the ITSC meeting of 04 December 2015, Committee members requested further information regarding the magnitude of legacy systems at the City and how the Information Technology Services (ITS) department is planning to address them. Legacy systems are software applications, hardware and networks that are at or beyond their lifecycle and/or are no longer supported by the vendor, and which continue to operate and rely on ageing IT infrastructure. These systems typically place considerable demand on resources responsible to support the ongoing operation and maintenance of the applications and related IT infrastructure. Legacy systems also create ongoing risks and challenges to the ITS department as the main line of support, as well as the business who relies on technology to enable service delivery and day-to-day administration. For example, supporting old technologies:

- creates an unstable, and in some cases incompatible, environment to integrate with newer and innovative technologies;
- impedes critical core lifecycle requirements and drains resources when needing to make old technologies work on newer systems;
- means that the ITS department is expending the majority of its resources on maintaining antiquated systems instead of focusing on new priorities and keeping pace with the industry; and,
- creates business continuity risks for the Corporation should an old application or system fail, and the vendor no longer provides support or fixes.

In 2014, staff in the ITS department initiated an operational capacity review specifically targeting legacy applications that were in need of proper lifecycle management.

The focus of the initiative was to:

a) create resource capacity in ITS by eliminating and/or outsourcing the support for old technologies that require significant time and money to maintain;
b) reduce the number of applications and complexity of the IT ecosystem in order to address ongoing risk and agility issues, and to ensure the ability to support new incoming technologies; and,

c) implement a repeatable process for planning the lifecycle of systems with consideration for data migration, integration planning, support and maintenance planning, and replacement costs.

This operational initiative produced the following outcomes:

- An inventory of 188 suites of legacy applications for review and assessment with the business owners;
- A categorization of all business applications utilizing Gartner's TIME (*Tolerate; Invest; Migrate; Eliminate*) model as a best practice (which is elaborated later in this report); and,
- Identified 59 suites of applications for elimination, of which 47 have been successfully eliminated.

In 2014, budget challenges required the initiative to be suspended before the remaining applications could be eliminated, and before tendering could proceed for those requiring outsourced support and maintenance. In the absence of funding, the ITS department has continued to work towards eliminating applications, outsourcing where business owner departments can afford, and has continued to build the program into a formal Application Portfolio Management framework as outlined in this report.

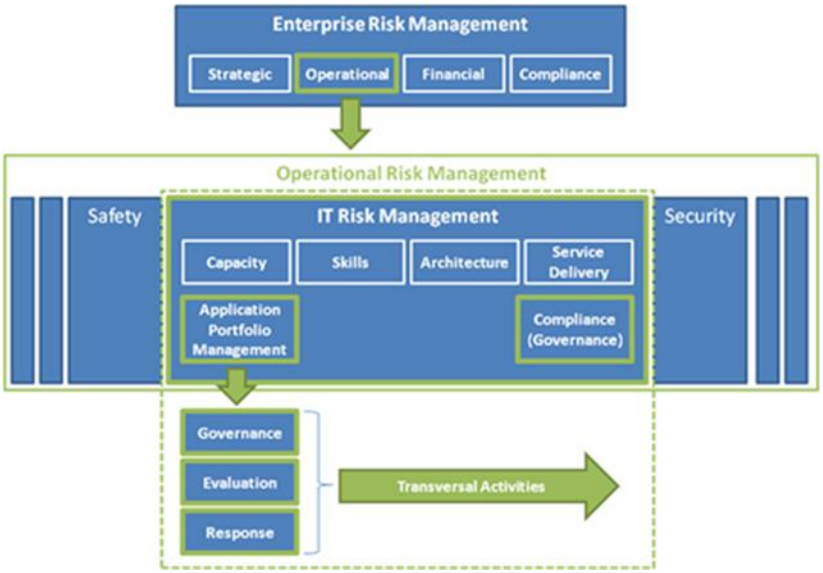
At the Audit Committee meeting of 26 November 2015, the Auditor General tabled the Annual Report and detailed audit reports, which included an Audit of Information Technology Risk Management for the City of Ottawa. IT risk is defined as: *The business risk associated with the use, ownership, operation, involvement, influence and adoption of IT within an enterprise.* It consists of IT-related events that could impact the organization's ability to achieve its goals and objectives. The resulting audit report identified the need for a robust Information Technology Risk Management (ITRM) framework, which:

- Is aligned to the Enhanced Risk Management (ERM) Framework;
- Incorporates the recommended Governance component of an ITRM framework, one that specifically:
    - Is aligned to the ERM Framework;
    - Includes clearly defined roles, responsibilities, and authorities (RRA) of City Executives and Management;
    - Clearly establishes the basis for a corporate risk culture, including risk tolerance and risk appetite guidelines;
    - Ensures that all mitigation strategies for risks identified as being above acceptable tolerance levels are considered for inclusion in the Annual

Corporate IT Plan based on risk/priority, regardless of whether there is pre-approved funding identified;

- Includes clearly defined roles, responsibilities, and authorities (RRA) for all City employees involved in ITRM;
- Incorporates a well-documented Audit Universe/inventory and a risk register;
- Incorporates a well-developed challenge mechanism conducted by trained and qualified IT professionals;
- Ensures that all mitigation strategies for risks identified as being above acceptable tolerance levels are communicated to Senior Management in a comprehensive and effective manner.

As part of the Strategic Initiative #53-IT Transformation in the 2015-2018 Corporate Strategic Plan and in response to the Audit on IT Risk Management, Information Technology Services has undertaken to implement an Application Portfolio Management (APM) framework to evaluate and address legacy systems in a repeatable and predictable manner which aligns with the Corporation's IT governance processes and annual budget cycle. ISACA, an international professional association focused on IT Governance, published the Risk IT Framework in order to provide an end-to-end, comprehensive view of all risks related to the use of IT. Application management and the associated "full stack" of related IT infrastructure represent a significant amount of IT use within an enterprise. Accordingly, APM must be a substantial component of any ITRM framework (see *Figure 1- APM in Context*).



APM IN CONTEXT 1

Although the development of the detailed IT Risk Management framework per the Auditor General recommendations is outside the scope of this report, Application Portfolio Management is a critical component and is being developed with alignment to the overarching ITRM framework.

DISCUSSION

The Information Technology Services (ITS) department is developing a best practices based Application Portfolio Management (APM) framework that will improve the Corporation's technological stability and agility and establish discipline and visibility around the real-time costs, risks, and business value of deployed applications. The purpose of this methodology is to better inform application planning and priority-setting, and identify opportunities to reduce IT risk and total cost through providing ITS staff and the business owners a dashboard view of the state and age of applications within the Corporation using a consistent method of evaluation.

There are three primary processes for assessing applications:

- Inventory Management – ongoing maintenance of the application inventory and stakeholder information;
- Application Assessment – a method to consistently evaluate the state of applications based on standard assessment criteria; and,
- Portfolio Classification Framework – a best practice for classifying applications within the portfolio to drive management decisions.

Linear thinking in IT planning, whereby applications are deployed and then run forever, leads to an endless proliferation of IT systems that is not sustainable. The practice of adding new software applications without retiring old ones leads to an excessive consumption resources to maintain and operate legacy applications. As part of the IT Transformation strategic initiative, the ITS department defined *City IT Principles* to guide decision-making around IT strategy gaps. Principle #6 states: "Growth of enterprise IT capabilities upon a stable base to meet business needs is more important than protecting legacy applications." The purpose of this principle is to ensure that the City can remove the roadblocks of carrying old technologies in order to build new technology capacity and capabilities.

Application Portfolio Management is a proven methodology for managing IT applications as assets that are to be retired at the end of their useful lives. Application Portfolio Management provides a feedback mechanism that mitigates linear IT planning by turning it into a closed loop that feeds metrics for application retirement back into the software acquisition process.

The Benefits of an Application Portfolio Management Framework

To be effective, Application Portfolio Management must become an integral part of the IT demand management, project approval, and lifecycle management processes.

In today's enterprises, misalignment between business goals and IT delivery is a common problem. One of the ways that APM enables improved management of IT expenditures is by providing a feedback loop on the value of legacy applications so that an organization can proactively and correctly scrutinize its maintenance and operations budget. In addition, APM enables existing and proposed IT projects to be consistently evaluated and rejected or shut down when it makes business sense to do so.

The value delivery of APM can be measured by assessing its positive effect on an organization's IT investments. Below are several examples of measurable improvements that APM can bring to an enterprise.

- Better support of business goals by investing a higher percentage of the IT budget on new initiatives and a lower percentage on maintenance and operations
- Greater IT investment in strategic, high-value, and transformative projects
- Cost avoidance through more efficient software licensing
- A reduced number of IT projects so that ITS is not working on more projects than available resources can support
- Requests for new IT services and assets handled more adeptly by managing the demand portfolio
- Reduction in the number of redundant data sources throughout the enterprise
- Reduction in outages when deploying new applications to production
- Reduction in the number of IT support incidents

Successful APM initiatives require access to information at every stage of the process to effectively evaluate each application's use, function, value and risk across multiple years. Commitment to APM excellence enables IT organizations to shift the balance of budget spend from operational and maintenance activities to more strategic projects that drive innovation for the business. To accomplish this, the Corporation is implementing refreshed IT governance processes at the same time as conducting a rationalization of applications.

The Application Lifecycle

The ITS department has completed the first stage of implementing a disciplined Application Portfolio Management framework, namely establishing a repeatable lifecycle management practice for business applications that integrates with existing IT governance and risk management processes. Over the past two years, all business applications have been inventoried, reviewed and classified according to a model

derived from Gartner's T.I.M.E. (Tolerate, Invest, Migrate, Eliminate) approach. *Figure 2 – Application Lifecycle* demonstrates the progression of a technology solution from inception at the project development stage to operations once the application is deployed, and then through the regular assessment and decision checkpoints of Tolerate, Migrate and eventually Eliminate. "Eliminate" can mean that an application is retired and removed from the IT environment, enhanced and redeployed, replaced entirely with a new solution, or outsourced to a vendor for ongoing support and maintenance in a secure external environment.

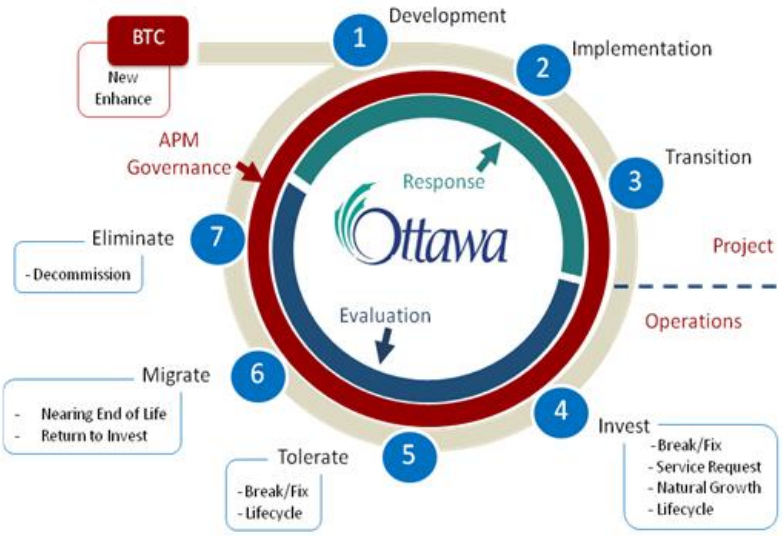


FIGURE 2 - APPLICATION LIFECYCLE 1

Following full implementation and adoption of the APM framework, it is expected that all new and existing applications, including business-specific, Enterprise, Desktop, Managed Services and Cloud-based, will be inventoried and managed through the application lifecycle.

Implementing Application Portfolio Management

ITS staff will undertake the implementation of the Application Portfolio Management framework in the manner set out below.

Step 1 - Application Rationalization

Originally initiated as part of the ITS operational initiative, application rationalization has been ongoing over the past two years. Initial focus has been on the elimination of applications that can no longer provide business value, are not compatible with current platforms, or applications where skilled resources are no longer available to support them. Over the past two years, 47 applications have been eliminated and another 12

applications have been classified as “Eliminate” candidates over the course of the current year. ITS staff have documented a list of 239 suites of applications as of March 22, 2016.

Step 2 – Formalize Retirement Thresholds

It is important to establish retirement thresholds that can be applied consistently when assessing the state of an application in order to inform lifecycle and investment decisions. Retiring an application may require the commitment of resources that are difficult to justify. It may also require that a line of business be willing to suspend functional releases during migration to a new application. Consequently, each application's retirement tends to be delayed indefinitely. However, if an application falls below a certain threshold for value, reliability, usability, or technical fitness, its retirement might be designated as a matter of policy or risk mitigation and the resources required to decommission it are easier to justify. ITS staff will establish these retirement thresholds for documentation in the APM framework and as part of the overall ITRM framework.

Step 3 – Formalize Portfolio Classification Framework

The purpose of classifying applications within the portfolio is to help organize and align application roadmaps with business owners and stakeholders to allow for proper planning and prioritization of investment. Although ITS staff have used the T.I.M.E. model to initially classify applications, additional criteria must be developed to drive appropriate evaluation and decision-making as each application moves along its established lifecycle.

Step 4 – Align with Governance Processes of ITRM Framework

ITS staff will integrate the APM approach within the overall IT Governance processes and Risk Tolerance guidelines. In particular, and in line with the IT Risk Management Framework, ITS staff will develop an objective way to analyze and quantify the risk associated with each application and at each stage of the model. Once risk guidelines have been determined and applied to each application, ITS staff will work with the Corporate Programs and Business Services Branch in the City Manager’s Office to document the relevant information in the Corporate Risk Register.

Step 5 – Publish Application Portfolio Dashboard

After each application in the portfolio is assessed and rated, ITS will produce a dashboard for review and action through the IT governance and IT Risk Management processes. A dashboard view of the state of all applications becomes a tool for prioritizing application overhaul initiatives to maintain a set of effective applications for

the Corporation. In addition, the application portfolio dashboard becomes another data point used by ITS staff to classify applications in collaboration with business owners, and Enterprise Architecture staff, in order to establish a way forward for each application. Enterprise Architecture will ensure that business and technical roadmaps are created and maintained, along with technical compliance standards, to assist in classifying applications. It will also maintain an inventory of existing applications in order to maximize reuse of software, to increase agility in updating/replacing applications, and to limit increases to software costs for the corporation.

Step 6 – Refresh Application Inventory (the "IT Universe")

The true cost of managing an application includes such things as technical support staff, computing resources, network, and associated infrastructure. This is often referred to in the industry as the "IT Universe". Each application must be reassessed on a regular basis, starting with a fresh baseline of the application inventory. This ensures that all assets are accounted for and appropriate lifecycle planning and decision-making can be undertaken by ITS and the business.

Step 7 – Establish Review Cycle for Reclassifying and Assessing Applications

The refreshed Application Inventory must be reclassified and rated on a regular basis as set out in the formalized Application Portfolio Management framework. ITS staff will work within the IT Governance and IT Risk Management processes to establish appropriate review cycles that will align with corporate planning processes and annual budget cycles.

Step 8 – Update Risk Register

The Risk Register must be updated with outcomes of the Inventory Refresh and Reclassification exercise. This will allow consistency with the Risk Tolerance guidelines established by the governance initiatives.

RURAL IMPLICATIONS

There are no rural implications with staff implementing the APM framework as outlined in this report.

CONSULTATION

No public consultation was undertaken for the purposes of this report.

LEGAL IMPLICATIONS

There are no legal impediments to implementing the recommendation in the report.

RISK MANAGEMENT IMPLICATIONS

There are risk implications. These risks have been identified and explained in the report and are being managed by the appropriate staff.

FINANCIAL IMPLICATIONS

There are no financial implications associated with this report.

ACCESSIBILITY IMPACTS

The Application Portfolio Management framework will enhance AODA compliance for web applications. As part of the Enterprise Architecture program there will be periodic AODA compliance testing. Should the application fail the accessibility testing, the compliance risk will be added to the overall APM risk assessment as a serious issue. Following that, the application business owner will be required to develop a plan for either remediation or replacement of the application.

TECHNOLOGY IMPLICATIONS

The Application Portfolio Management will continue to work in alignment with the corporate wide IT Governance processes. Application owners will be involved in discussions about their applications on an ongoing basis. As applications are classified, they will be brought forward to the Business Technology Committee for review. Prioritization decisions will be made by the Business Technology Committee on a corporate wide basis based on business value and risk.

TERM OF COUNCIL PRIORITIES

The implementation of an Application Portfolio Management framework is directly related to Corporate Strategic Initiative #53 – IT Transformation and supports the following 2015-2018 Term of Council Priorities:

Service Excellence - SE2 Improve access to City services through digital service delivery.

DISPOSITION

Following consideration of this report, Information Technology Services staff will work with the Business Technology Committee and Department Heads to identify action plans for each application requiring lifecycle in this Term of Council as a priority, followed by the remaining applications where required. Following implementation of the APM framework, staff will report back to the IT Sub-Committee with the completed policies and procedures.