Audit of the Enterprise Awards Management System (EAMS) Project

Corporate Internal Audit Division (CIAD),
NSERC/SSHRC
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EXECUTIVE SUMMARY

Background

The Natural Sciences and Engineering Research Council (NSERC) and the Social Sciences and Humanities Research Council (SSHRC) support scholarly endeavors in Canada's universities. More specifically, NSERC supports researchers and university students in their advanced studies, promotes and supports discovery research, and fosters innovation by encouraging Canadian companies to participate and invest in post-secondary research projects. Similarly, SSHRC promotes and supports university-based research and training in the humanities and social sciences. To deliver on their respective mandates, the Councils rely on a hybrid (both paper and electronic) information management system to manage applications, adjudication and awards.

Realizing the shortcomings of their respective information systems and driven by a desire to consolidate them, the Councils launched the Enterprise Awards Management System (EAMS) project in 2008. The objective of this project was to replace various complex, fragmented information systems with a seamless, consolidated system. The new system would thereby reduce the amount of work involved in operating the current information technology (IT) infrastructure, and improve efficiency by managing information electronically.

Why EAMS is Important

The EAMS project is the technical component of a larger Business Transformation Initiative, which aims to provide clients with more efficient access to the Councils' services. As such, EAMS will directly impact the day-to-day operations of both Councils and change how the Councils conduct their business. With a budget of approximately six million dollars over a period of three years, the investment by both Councils in this project is significant.

Audit Objective

The objective of the audit was to assess whether the EAMS project has been managed with due regard for economy and efficiency. Specifically, the audit focused on whether the project employed sound project management practices in the following areas: project governance, technology selection and procurement, project planning and management, and capacity.

Key Audit Findings

Project governance

1. Within the governance structure, the EAMS Steering Committee (EAMS SC) was responsible for providing direction to the project by reviewing progress, risks and issues, identifying priorities and rendering decisions. In addition, this committee was responsible for making recommendations to the Information Management/Information Technology Bi-Council Steering Committee (IM/IT SC) for the continuation or discontinuation of the project. The audit found that the reporting and decision-making relationships between the project team, the EAMS SC and the IM/IT SC were not clearly delineated to ensure that decisions were made at the appropriate level.

2. The audit found there was limited evidence to demonstrate that key decisions were made and followed up by the EAMS SC. The audit also noted that key decisions were made by the IM/IT SC without first being debated by the EAMS SC.

Selection of technology and procurement

3. The software solution was selected without a complete set of business requirements, increasing the risk that the software would not meet the needs of the Councils and contributing to cost overrun for additional modification work.
4. The audit noted that the agreement between the Councils and Fonds de recherche en santé du Québec (FRSQ) was compliant with Treasury Board Secretariat (TBS) polices. However, the documentation supporting this agreement was incomplete, posing a potential risk should the Councils be subjected to a wider review of contracting practices.

Project planning and management

5. While the EAMS project had clear objectives, the project was not guided by a clear scope or a project work plan to ensure successful completion.

6. Risks were identified, such as those related to securing the intellectual property rights for the FRSQ product. However, detailed risk mitigation strategies were not developed.

Capacity

7. The financial and human resources required to complete the project were not assessed, which led to gaps in capacity and subsequent delays to the project.

Conclusion

The problems and challenges encountered with the EAMS project during the 'proof of concept' (PoC) constitute a loss in economy and efficiency for the Councils. As a cornerstone to the larger Business Transformation Initiative, EAMS intends to pave the way for the Councils to conduct their business and manage information more efficiently and effectively. Given this importance, the Councils should continue to find and adopt the best technical solution possible. However, it is recommended that before further investment is made, the Councils should conduct the planning and risk analysis necessary to attain greater assurance that the EAMS project will meet their business requirements and be completed in a economical and timely manner.

1. PROJECT BACKGROUND

The Councils support scholarly endeavors in Canada's universities. More specifically, the Natural Sciences and Engineering Research Council (NSERC) supports university students in their advanced studies, promotes and supports discovery research, and fosters innovation by encouraging Canadian companies to participate and invest in post-secondary research projects within the sciences. Similarly, the Social Sciences and Humanities Research Council (SSHRC) promotes and supports university-based research and training in the humanities and social sciences.

The Councils currently use several systems to manage grant applications and monitor funds disbursed for approved research projects. In brief, applications are processed through a series of steps that involve both electronic (i.e., applications completed online, award results posted online, financial reconciliation forms provided online and information stored in a database) and manual processing (i.e., applications mailed in, applications and supporting documentation photocopied, data verified).

For several years the Councils have discussed the need to modify their business and various information management systems to create a more efficient and seamless approach to business. In response to a growing desire for change, the Councils have jointly embarked on a Business Transformation Initiative, which aims to create greater efficiencies in the way they interact with the research communities and streamline their business requirements. The initiative is comprised of four major projects including the Business Process Definition (BPD) project that is designed to develop the Councils' business requirements; the Electronic Document and Records Management System (EDRMS) project that is intended to integrate technologies to better manage electronic files; and the Intranet project that is designed to rebuild SSHRC's and NSERC's intranet. At the centre of this initiative is the Enterprise Awards Management System (EAMS) project.

The project to implement the EAMS within the two organizations has been under development since 2008 and is projected to take three years to implement at an approximate cost of $5.5M to $6M. Currently, the team has completed a 'proof of concept' (PoC) of two programs (SSHRC's Post-doctoral Fellowships and NSERC's Collaborative Health Research Projects Program) using an off-the-shelf system supplied by Fonds de recherche en santé du Québec (FRSQ).

2. AUDIT OBJECTIVE AND SCOPE

The objective of this audit is to examine the extent to which the EAMS project from approximately April/May 2008 to December 2009, has been planned and managed with due regard for economy and efficiency[1] to ensure resources were spent prudently and the project could be successfully completed in a timely manner.

The scope of this audit covered the following areas:

A. governance;
B. selection of technology and procurement;
C. project planning and management; and
D. organizational capacity.

It is beyond the scope of this audit to examine the suitability, technical specifications or performance of the EAMS itself.

The audit work was conducted over a seven-month period between August 2009 and February 2010 using Corporate Internal Audit Division (CIAD) resources, and involved access to information that was available through NSERC-SSHRC headquarters (documents and staff interviews).

3. METHODOLOGY

The CIAD used the following methodology to conduct its work:

- file and document review of various sources of information, including committee meeting minutes, planning documentation (i.e., project charter, draft project plan, memoranda of understanding [MOUs]), contracting files and financial spreadsheets; and

- interviews with key stakeholders (i.e., project team, contracting managers, program directors, senior management) on major issues, challenges and risks related to the project.

The audit was completed using standards set by the Institute of Internal Auditors (IIA). The criteria (outlined in Appendix I) were used to structure the audit and draw conclusions on the information gathered. The criteria are based primarily on TBS project management and procurement policies established for the Government of Canada.

[1] Economy—The right amount of resources, of the right quality at the lowest cost. (Source: OAG, 2008)
Efficiency—The minimum resource inputs to achieve a timely and quality product. (Source: OAG, 2008)

It is important to note that the EAMS project is ongoing. However, for the purpose of the audit, the timeframe of the project under review was from April/May 2008 to December 2009.

4. KEY AUDIT FINDINGS

Governance

The EAMS project was developed and implemented by a project team within the Information Management and Technology Services (IMTS) Division. The team was responsible for the development of a plan, oversight of implementation and quality assurance. This team was led by a project manager and director who had full authority over the direction of the EAMS project.

Within the governance structure, the project team interacted with the EAMS Steering Committee (EAMS SC) which met on a monthly basis until October 2009 and was responsible for providing direction to the EAMS project by reviewing project progress, risk and issues, identifying priorities and rendering decisions. In addition, this committee had the responsibility to make recommendations to IM/IT Bi-Council Steering Committee (IM/IT SC) for the continuation or discontinuation of the project. The 16-member EAMS SC was co-chaired by the NSERC and SSHRC vice-presidents and membership included representatives from the project team, the internal user community and the Human Resources and Communications Divisions of NSERC and SSHRC (refer to Appendix II).

The IM/IT SC met on a quarterly basis and was responsible for providing strategic direction, planning advice, and policy direction for information management and information technology services for NSERC and SSHRC.

4.1 Reporting and decision-making were not clearly delineated.

It was found that documentation describing the roles of responsibilities within the project's governance was vague or unavailable. A governance framework detailing how information would be reported and which levels would be responsible for specific decisions was absent. In place of a governance framework, a project charter was developed outlining objectives, elements of governance and management functions. This document was finalized and served as a guide for the direction of the EAMS project. However, there was little information in the charter describing the responsibilities of each level, the types of decisions to be made, and how information would be transmitted from one level to the next. For example, the charter contains a governance schematic (Appendix II) but there is no explanation of what kind of decisions the project team would render or how the project team would report to the EAMS SC.

4.2 Key decisions were not made by the EAMS Steering Committee.

It was found that while the EAMS SC identified and discussed various project-related issues, important decisions were not always rendered. The audit noted that during the course of the project, the committee identified the need for improved stakeholder communication and the development of change management strategies to facilitate the transition from one technology to another, however no follow-up occurred. Despite their mandate, it was also found that important project decisions by-passed the EAMS SC. For example, in September 2008, a proposal to extend the MOU with FRSQ came forward to the IM/ IT SC. However, there was no evidence from the meeting minutes to demonstrate that the proposal was first brought to the EAMS SC for its review and recommendation, as per its terms of reference.

The reason why the EAMS SC did not render decisions or why this body was not included in the decision making process is likely multi-pronged. Attendance at the meetings by key stakeholders was inconsistent which impacted the types of decisions that could be made. Part of the reason may also be linked to the changing role of the committee as the project unfolded. While the terms of reference clearly place decision-making responsibility on the committee, CIAD was informed that their perceived role changed and the committee eventually became an information receiving body. Part of the reason may also be linked to the fact that the committee's chairs were vice-presidents who also sat on IM/IT SC. Their dual representation may have made it less necessary to formally seek approval from the EAMS SC before decisions were made at the IM/IT SC. Nevertheless, by-passing the EAMS SC to make decisions at the IM/IT SC suggests that the former had limited control over the direction of the project, underscoring an area of lost efficiency in its management.

Selection of technology and procurement

Prior to the selection of the FRSQ system, the Councils conducted a product review of nine potential vendors. There was limited documentation identifying why these specific vendors were selected. Nevertheless, vendors were compared along ten general criteria (i.e., costs under $1 million, product flexibility, bi-lingual capacity) and three were found to adequately address the requirements: FRSQ, Award Information Management System and G3 by Grantium. Subsequently, presentations from these three vendors were given to approximately 30 members, representing various divisions from both Councils, in October/November 2008 and January 2009. Feedback from these presentations was used to select a vendor and FRSQ's product was deemed the best fit for the Councils.

4.3 The FRSQ system was selected and procured with partial business requirements, and limited knowledge of user needs and risk.

It is important to note that the business requirements had not been developed at the time of the vendors' product review, nor had the team identified users' needs. As such, vendors' products were not assessed on the extent to which their offerings met the Councils' requirements for an integrated electronic system.

As mentioned earlier, once the three companies were selected, each vendor presented their product to staff in both Councils. CIAD was informed that the selection of FRSQ over their competitors was based on positive feedback during these sessions. This may have been an acceptable approach had the participants been asked to assess the software based on specific assessment criteria. However, CIAD did not find any evidence to suggest that this process followed a methodology or that participant feedback was rolled up and synthesized to support FRSQ's selection. Nor was there evidence to suggest that the participants critically reviewed the products in relation to business requirements, user needs or risk.

4.4 While the agreement between the Councils and FRSQ was compliant with TBS polices, documentation was incomplete.

Within the MOU vehicle, the Councils used the TBS guidelines for 'collaborative arrangements' between public sector entities to justify an MOU with FRSQ. TBS defines such collaborations as "arrangements between a government institution and one or more parties (inside or outside government) where there is an explicit agreement to work cooperatively to achieve public policy objectives and where there is delineation of authority and responsibility among partners, joint investment of resources (such as time, funding, expertise), allocation of risk among partners, and mutual or complementary benefits."

Moreover, TBS notes that the policy is intentionally broad, allowing "for a wide variety of arrangements that can be classified in many ways, including purpose, type of activity, duration, geographical scope, number and identity of partners, institutional arrangement, type of agreement, extent of power sharing and the role of government." While the decision to pursue a MOU with FRSQ as a 'collaborative arrangement' may have been compliant with TBS policy, the documentation to support this decision was largely absent from the Councils' contracting files. The file did not contain any information pertaining to the policies used to strike up the collaboration or how this agreement was negotiated. Furthermore, neither the rationale for FRSQ's selection or payment information related to deliverables were present in the files.

Similarly, there was a lack of documentation related to third-party involvement in the project. CIAD was informed that work had been conducted with E-vision, a vendor providing support and maintenance to the FRSQ system during the PoC.

However, their involvement in the project was not reported in key documents (i.e., MOU, draft project plan, Service Level Agreement). It is unclear why the participation of E-vision in the project was not better documented.

In sum, while the Councils' procurement of the FRSQ software was compliant with the TBS policy, the documentation related to the Councils' decisions was limited. The contracting files were incomplete and third party involvement in the project was not well documented, potentially posing a risk if the Councils were ever required to explain their contracting decisions as part of a larger review process.

Project planning and management

As part of the larger BTI intending to create a more effective and economical delivery of service to the research community, EAMS aims to provide an electronic solution to shortcomings of the current information management system (See Appendix III for financial information).

The original MOU between the Councils and FRSQ, which was signed in May 2008 and was set to terminate on March 31, 2009, established a range of costs for the PoC period estimated between $500,000 and $600,000. The costs associated with the MOU were intended to cover all licensing, product integration and support expenditures for a one-year PoC period in which two programs (the SSHRC Postdoctoral Fellowships program and NSERC's Collaborative Health Research Projects Program (CHRP)) would implement the FRSQ system.

Once the project started, three additional amendments were made to the MOU. The first, made in December 2008 for an amount of $400,000, cited unforeseen work as the justification (i.e., language switching, missed business requirements, FRSQ denial of service attack, training). A subsequent amendment was made in March 2009 for $250,000 and cited additional integration product work that was not anticipated in the scope of the original MOU. A final amendment for a range of $547,000 to $742,000 was signed in June 2009 and indicated that additional funds were required for a more comprehensive integration of NSERC and SSHRC's PoC for a period concluding on March 31, 2010. More specifically, the amendment highlighted that outstanding business requirements were not yet tested and implemented (i.e., competition scoring, appeals, releasing funds, monitoring accounts, establishing payment schedules, corporate reporting etc.).

4.5 The "Proof of Concept" approach is a best practice, but the project was implemented as a 'pilot'.

The EAMS project adopted the PoC approach to validate the feasibility of the selected software. This path is considered by many in the Information Technology (IT) industry as a best practice. However, the audit noted that the

EAMS project was not launched as a PoC. Rather, the project proceeded as a 'pilot'.

The ideal IT project path used to mitigate risk, refine scope, and provide greater confidence in planning is as follows:

PoC > Pilot > Production

A PoC should generally be done very early in the development of a system. It is used to validate technical feasibility, identify potential stumbling blocks, identify what a platform can or cannot provide, and determine the scope and level of customization needed. The outcome is a technical feasibility confidence factor and estimate of effort. In contrast, a pilot is a larger, more comprehensive exercise intended to simulate a production environment.

While packaged as a PoC, the project's activities more closely resembled the activities found in a pilot phase of a project. Instead of testing the software in a controlled testing environment, the FRSQ system was implemented and continually modified while it was running 'live', simulating a production environment. Had the EAMS project been implemented using the PoC principles, the project could have been stopped earlier and the costs incurred by the Councils may have been substantially less.

4.6 The EAMS project had clear objectives, but was not clearly scoped.

The objectives of the EAMS project were clearly articulated. EAMS aimed to simplify the submission process for applicants and partners, addressing frustrations; address the inefficiencies of the current systems that support the current program delivery process, reducing the amount of manual validation and re-entry work; equip the Councils with a system that is flexible and can quickly adjust to new business requirements; consolidate technologies to retire obsolete systems; and, provide reporting functionality.

Unlike the objectives, the scope for the project lacked clarity. Rather than being developed within an established parameter, the scope was based on a list of project activities. Other documents exist which provide more information on the intended scope, but many of these documents were left in draft form and were never approved by senior management. As such, there was no final or succinct scoping statement to prevent scope creep or shifting project requirements. This suggests that the project proceeded with few restrictions to limit the work involved. Not surprisingly, the MOU between the Councils and FRSQ required several revisions for work which had not been scoped in the original agreement. As previously reported, the MOU was amended three additional times for approximately $1.2 million.

4.7 The project proceeded without a work plan.

A draft project management plan was developed in June 2008 and included information on roles and responsibilities, managerial processes and high level timelines. However, this plan was left in draft form and not finalized for implementation. In addition, the project proceeded without a work plan or work breakdown structure detailing phases of work and the activities involved to accomplish objectives. This suggests that there were few constraints or formal expectations placed on the project.

4.8 Plans to mitigate project risks were never developed.

The project's charter outlines the intent of the Councils to incorporate a 'continuous, proactive risk management component' within the EAMS project. In support of this, some documentation was found identifying high level risks in the areas of change management, human resource requirements and intellectual property. However, there is no evidence to suggest that these risks were captured as part of an established risk framework intended to systematically identify and mitigate project management risks.

4.9 Further investment into FRSQ continued after deficiencies and risks were identified.

IMTS conducted a PoC evaluation in early 2009 which highlighted several difficulties in using the FRSQ system to support the SSHRC Postdoctoral Fellowships and CHRP programs. The evaluation found that the PoC had only partial success and the system was unable to address all of the Councils' business needs. A gap analysis completed at the same time also found a number of limitations with FRSQ. The analysis showed that the system performed poorly in managing a large number of applications, did not offer reporting functionality, could not provide budget and financial support and failed to provide users with a 'user-focused' view of the system.

Findings from the PoC evaluation were tabled at the IM/IT SC in early 2009. Despite the number of problems outlined in the evaluation, the Councils proceeded with the MOU in support of the FRSQ system and amended it twice for a range of $797,000 to $992,000. It is unclear why further financial investments were made.

4.10 Senior management was briefed on the progress of EAMS, but no formal financial monitoring requirements were established.

Briefings on the project's progress were regularly made to the IM/IT SC from the project team. Information was also provided to the Councils' respective management committees (i.e., OMC, EMC). However, reporting on the EAMS project consisted mainly of status updates on the project's progress. Aside from

an expense spreadsheet, CIAD was informed there was no formal financial monitoring for the project. Furthermore, no evidence was found to demonstrate the project was tracked against time or various other performance measures.

4.11 Considerable progress is being made to define the Councils' business requirements.

Closely linked with the EAMS project, and also under the BTI, is the Business Process Definition (BPD) project. The aim of this project is to directly support the EAMS project by identifying the Councils' specific business requirements to ensure the Councils' business needs are met by the new awards management system.

It was found that considerable progress had been made on developing the Councils' business requirements. At the time of this audit, IMTS had identified six major ongoing business issues (i.e., CV standards, applications standards, harmonized scoring and voting, institutional processes etc.) and had begun analysis and consultation with stakeholders and working groups. CIAD was informed that the target completion date for the analysis and consultation was December 31, 2009, and the information gathered was intended to better inform the newly proposed EAMS arrangement.

The completion of the BPD project prior to further developing EAMS is crucial, as the results gleaned from this project will be used to ensure that EAMS is developed in manner that addresses the needs of the Councils.

Capacity

In terms of how the EAMS project was resourced, the project team estimated that the total cost of the project would be between $5.5 and $6 million over a period of three years, and would include the costs of hardware, software, professional services and the salaries of Council employees. These expenses would be assumed within the IMTS envelope. Aside from the director responsible for the project, EAMS was staffed with seven resources. Three of these resources were consultants (i.e., assistant manager, quality assurance and training professionals) and the balance came from the Councils.

4.12 Financial and human resource capacity required to complete the project was not fully assessed.

While the Councils ensured the project was adequately resourced financially, there was little evidence of human resource planning to identify the expertise and number of staff required to complete the EAMS project. A business case defining the project's scope and identifying the financial and human resources needed to complete the project was not prepared. Furthermore, the Councils did not conduct a capacity assessment. As a result, the project proceeded without

sufficient knowledge of what capacity was necessary to complete a project of this size within a specific timeframe.

4.13 Resources limitations and skill set gaps led to delays.

Within the project team, gaps were identified in the quality assurance function. Staff was found to have limited testing and technical experience required to identify deficiencies in the FRSQ system which resulted in several requests to the service provider for modifications. While this contributed to delays, it is noteworthy to mention the team later hired additional resources to fill this gap.

Considerable gaps were also found in the capacity of the service provider to provide maintenance and support to EAMS during the PoC. The service provider collaborating with FRSQ, E-vision, was found to be small and did not have a sufficient number of resource people to support a large scale project. As a result, the company was unable to provide modifications and solutions for the testing of the system in a timely manner. Delays during the PoC were also linked to the service provider's limited expertise in business analysis, technical support, configuration management, documentation and product integration.

5. RECOMMENDATIONS

Governance

In developing a new governance structure for a new approach to EAMS, it is recommended that the project:

1) Establish a single point of accountability for the project. This will assist in identifying who is driving the project and facilitate the decision-making process.

2) Clarify the reporting and decision-making process. This includes:

    - clearly defining roles and responsibilities of each level within the governance structure. Close attention should be paid to how each level interacts within a larger Council-wide governance framework;

    - ensuring that each level is empowered to make decisions within their pre-determined authority and these decisions uniquely contribute to the direction of the overall project. Each level should also be held fully accountable for decisions rendered;

    - embedding continuous project monitoring and escalation mechanisms into the governance structure to facilitate tracking of the project's progress against clear milestones and objectives; and

    - developing clear documentation which supports the above.

Selection of technology and procurement

It is recommended that the project authority:

3) ensure that the supporting documents are included in the contracting file to enhance transparency and completeness;

4) identify their specific business requirements and user needs before proceeding with the EAMS project;

5) complete option and cost-benefit analyses to ensure that the costs and the benefits of the selected product are clear and the Councils have assurance that 'value for money' can be achieved; and

6) identify and develop risk mitigation strategies for high risk areas before any financial and human resource investments are committed.

Project planning and management

It is recommended that the project authority:

7) develop clear plans with concrete timelines, activities and deliverables. Such planning should be supported by a project scope detailing exactly what the project authority plans to do, with what resources and over what period of time;

8) ensure continuous risk planning is built into the project in which risk events are identified and mitigated over the course of the project. The development of risk plans will enable the project authority to prepare for factors which could delay or impede the project from reaching its objectives; and

9) establish financial and performance monitoring for the project. Developing monitoring plans will ensure that the Councils' financial investments are tracked and accounted for.

Capacity

In order to ensure the completion of EAMS, it is recommended that the project authority:

10) conduct an analysis of the financial and human resource requirements needed to ensure the project is funded and staffed at the appropriate level.

6. MANAGEMENT RESPONSE TO AUDIT RECOMMENDATIONS

Summary

NSERC and SSHRC management[2] accept the findings of the audit. Management agrees with the central finding of the audit that careful planning, analysis and testing will lead to the selection of new information technology systems that deliver successful results and greater value to the Councils' business.

The audit reveals inadequacies in the development and execution of the EAMS project, and proposes several ways in which the management of such projects may be improved.

[2] SSHRC and NSERC share common administrative services via the Common Administrative Services Directorate (CASD), and are jointly responsible for EAMS, a collaborative information technology project intended to serve both Councils. For the sake of convenience, in all other places where this document refers to this joint NSERC and SSHRC Management accountability, the term Management is used in the singular.

This Management Response addresses each of the deficiencies in turn and sets out comprehensive protocols for the governance and conduct of future complex, multi-stakeholder information technology (IT) projects.

NSERC and SSHRC management recognize that the overarching theme among the audit recommendations is the need for a more comprehensive, rigorous and transparent approach to the planning and execution of complex, multi-stakeholder IT projects. It should be noted that, independent of this audit process, several initiatives have already been undertaken with the goal of maturing project management methodology for IT projects. These have included the development of risk assessment tools, more rigorous project tracking processes and the hiring of staff with formal project management credentials.

NSERC and SSHRC will not pursue the EAMS project in its present form beyond the completion of the PoC stage. Management remains committed to the BTI and will defer the search for a new technology platform pending the implementation of the measures described below, including the development of a comprehensive information technology strategy to set the context for selecting all future IT platforms.

Background

NSERC's and SSHRC's Corporate Internal Audit Division conducted an audit of the EAMS project. Launched in 2008, EAMS was conceived by management as an essential business tool to improve services for those applying for and receiving the Councils' grants and scholarships. EAMS would involve a significant modernization of business and technical systems. The anticipated benefits included a reduced administrative burden for both external and internal communities, improved business processes and an enhanced ability to manage business knowledge within and between the Councils.

The execution of the EAMS project was delegated to the Information Management and Technology Services (IMTS) Division of CASD. Two award programs were chosen as test subjects for the PoC phase of the project: the SSHRC Postdoctoral Fellowships program and NSERC's Collaborative Health Research Projects Program. Staff from both programs were involved over a two-year period in project definition and development.

Response methodology

Management has developed its response under four major theme areas: Governance; Selection of Technology and Procurement; Planning and Project Management; and Capacity. While this audit focused on the EAMS project, management recognizes that the findings and recommendations can be applied to similarly complex, multi-stakeholder IT projects, which the Councils may

undertake in the future. As such, the management response aims to provide a framework for ensuring that the key areas of concern are addressed. A Project Management Framework will be designed to apply to all complex, multi-stakeholder IT projects and will be completed in the fiscal year 2011-12. The vice-president of CASD, in consultation with the IM/IT Bi-Council Steering Committee, will be responsible for leading the development of this framework. It is believed that this approach will result in the level of organizational change required to satisfy the audit recommendations.

Theme 1: Governance

Effective project governance underpins project success, and results in efficient and timely project decision-making. The Councils are committed to designing and implementing a governance framework that will define a common and structured approach to project governance for complex, multi-stakeholder IT projects. The framework will ensure that the degree of governance and oversight of a project is appropriate to the level of risk that it poses to the organization.

The following four key principles will guide the governance framework:

A single point of accountability: A single point of accountability for the success of the project will be identified.

Appropriate separation of project and organizational governance structures: The project governance (i.e., the process by which project decisions are made and issues resolved) needs to be appropriately defined with respect to the organizational governance structure (i.e., each Council's management committee structure).

Clear distinction between stakeholder consultation and project decision-making: Stakeholder consultation and project decision-making are necessary but distinct functions. While many stakeholders may need to be aware of a project and have input into shaping it, only those who participate in the project governance as members of decision-making bodies should be involved in making project decisions.

Qualified decision-making: Decisions must be supported by strong analysis and expert advice. The governance structure will be supported by expert groups which will provide information and advice to support decision-making on key issues.

Recommendation	Management Response
1. In developing a new governance structure for a new approach to EAMS, it is recommended that the project establish a single point of accountability for the project. This will assist in identifying who is driving the project and facilitate the	Agreed: The Project Management Framework will require the identification of a single point of accountability for all complex, multi-stakeholder IT projects.

Recommendation	Management Response
decision-making process.	
2. In developing a new governance structure for a new approach to EAMS, it is recommended that the project clarify the reporting and decision-making process. This includes: • clearly defining roles and responsibilities of each level within the governance structure. Close attention should be paid to how each level interacts within a larger Council-wide governance framework. • ensuring that each level is empowered to make decisions within their pre-determined authority and these decisions uniquely contribute to the direction of the overall project. Each level should also be held fully accountable for decisions rendered. • embedding continuous project monitoring and escalation mechanisms into the governance structure to facilitate tracking of the project's progress against clear milestones and objectives. • developing clear documentation which supports the above.	Agreed: With the establishment of the IM/IT Bi-Council Steering Committee, the Councils underwent a significant change in how IM and IT activities are governed. The EAMS project was the first complex, multi-stakeholder IT project to interact with this governance structure. The lessons learned through this experience will enhance the Councils' management of future major IT undertakings. The Project Management Framework will require that: • a more detailed Project Charter will be created for each complex, multi-stakeholder IT project. The Project Charter will identify the roles and responsibilities of each level within the project governance structure and how each level interacts within the Council-wide governance framework. • the governance structure of each complex, multi-stakeholder IT project include a clear delegation of roles and authorities among the decision making levels, including clear identification of responsible individuals, and properly defined expectations for reporting progress to senior management. • the Project Charter of each complex, multi-stakeholder IT project include regular reporting mechanisms and tools adapted

Recommendation	Management Response
	to the various audiences, and a report to be submitted on a regular basis to the project committee as well as senior management. The inclusion of risk management tactics, such as the use of go/no-go points, will be integrated into the reporting framework. • documentation outlining accountability, roles and responsibilities, and delegated decision-making authorities be provided to enable communication and to embed continuous project monitoring and escalation mechanisms for all each complex, multi-stakeholder IT projects.

Theme 2: Selection of Technology and Procurement

The selection and procurement of technologies needs to be based on clearly defined needs and specifications. The Councils will establish an internal process to ensure that business requirements and user needs are clearly defined before initiating any technology selection exercise.

Moreover, the Councils agree that the project team must properly incorporate procurement activities and considerations, including access to intellectual property and the ability of potential suppliers to deliver throughout the technology selection exercise. The technology selection exercise must also explore alternate implementation options and risk mitigation strategies so as to ensure maximum value for the Councils.

Recommendation	Management Response
3. It is recommended that the Project Authority pay greater due diligence to completing contract files to enhance transparency. It may be helpful to draft file requirements or checklists to ensure the project's contract files	Agreed: Working in collaboration with the EAMS stakeholders, the Procurement, Contracting and Materiel Management (PCMM) section will collect and add to the MOU file any available information to ensure completeness, audit-readiness and transparency.

Recommendation	Management Response
are complete, auditable and transparent.	In collaboration with the Executive Director, IMTS, the Director, Administration will ensure any available information is collected from IMTS and added to the MOU file. Completion: December 2010
4. It is recommended that the Project Authority identify their specific business requirements and user needs before proceeding with the EAMS project.	Agreed: As identified in the Audit, considerable progress has been made in developing the Councils' business requirements through the Business Process Definition project. Management agrees that the comprehensive identification and definition of business requirements is a crucial prerequisite to proceeding with an EAMS successor project. A vice-president at NSERC and the vice-president of grants and fellowships at SSHRC will be responsible for ensuring that the organizational business requirements are clearly defined and documented prior to undertaking any EAMS successor. All future complex, multi-stakeholder IT projects will identify a vice-president-level responsibility for the definition of business requirements prior to proceeding with project execution. The vice-president of CASD will ensure that the Project Management Framework incorporates a user-requirements analysis component for all complex, multi-stakeholder IT projects.
5. It is recommended that the Project Authority complete option and cost-benefit analyses to ensure that the costs and the benefits of the selected product are clear and the Councils have assurance that 'value for money' can be achieved.	Agreed: The Project Management Framework will require that the Project Authority complete an option and cost-benefit analysis when selecting products and suppliers for future complex, multi-stakeholder IT projects to ensure that the proposed projects represent value for money.

Recommendation	Management Response
6. It is recommended that the Project Authority identify and develop risk mitigation strategies for high risk areas before any financial and human resource investments are committed.	Agreed: While some aspects of risk had been identified and assessed throughout the course of the EAMS project, no formal risk assessment tool had been used. Project staff relied on qualitative indicators, such as analogous estimation and professional experience, with the result that little quantitative risk analysis was undertaken. It should be noted that, independent of this audit, a quantitative project risk assessment framework was approved by the IM/IT Bi-Council Steering Committee in the fall of 2009, and will apply to all future projects. This framework will form one of the inputs into the formulation of the Project Management Framework. The Project Management Framework will require that, from the inception of any complex, multi-stakeholder IT project, the project manager prepare a Project Profile and Risk Assessment (PPRA), in consultation with all relevant stakeholders to identify, analyze and assess project risks; develop an appropriate risk mitigation strategy; and assign each risk to the appropriate owner.

Theme 3: Project Planning and Management

The Councils have a demonstrated capacity to successfully execute a wide range of technology and non-technology projects. However, the Councils recognize that project planning and management capabilities for complex, multi-stakeholder IT projects, especially those intended to serve the similar but separate needs of both Councils, are an area in need of improvement.

While some planning activities were conducted prior to and during the execution of the EAMS project, there was a lack of rigor given the scope, complexity and delivery timelines of the project. The time pressures related to delivering two active grant programs operating under set timeframes through the EAMS system, and the initial underestimation of the technical requirements, appear to have been the primary reasons behind insufficient attention being paid to the planning

of the project at the onset. This situation was compounded by an informal approach to project management activities. It should be noted that, independent of this audit, the Councils have already taken steps to improve the planning and management of IT projects.

Before any successor to the EAMS project is started, the Councils will develop risk and project management frameworks within their organizations. The corporate risk management framework will be adopted in the fiscal year 2010-11, while the project management framework will be adopted in the fiscal year 2011-12.

The following core principles will drive the development of an effective, sustainable and focused capacity for project planning and management throughout the Councils:

Demonstrated return on investment: The application of quantitative metrics and tools (such as a cost-benefit analysis) at the onset of a project proposal to ensure that undertaking the project is worthwhile.

Development of clear priorities: Clear identification of corporate priorities, and active monitoring and realignment of the project as these priorities evolve.

Clear Objectives and scope: Clear definition of objectives and scope of the project through the development of a Business Case and a Project Charter. Active focus on the objective of the project and the implementation plan throughout the execution of a project.

Development of a project risk classification profile: The capability to quantitatively assess the risk that a particular project poses to the organizations, using project planning and management tools to adequately manage this risk.

On time and on budget: Tracking, monitoring and reporting of project expenditures and deadlines on a regular basis to ensure that the project is delivered on time and on budget.

Development and maintenance of proper documentation: The production of consistent documentation such as a Business Case, Project Charter and Project Plan to ensure that all parties understand their roles and execute their deliverables according to the expectations set out in these documents.

Effective communication: The maintenance of effective and continued communication between all parties (such as the project champion, project owner, project manager, project governance committees, project team members, Council clients and external stakeholders).

Stakeholder engagement: The maintenance of stakeholder support and engagement throughout the project, so the project team can meet its objectives.

Recommendation	Management Response
7. It is recommended that the Project Authority develop clear plans with concrete timelines, activities and deliverables. Such planning should be supported by a project scope detailing exactly what the Project Authority plans to do, with what resources and over what period of time.	Agreed: The Project Management Framework will require that the project manager develop a Project Charter for approval by the stipulated authority before the development of a project plan. The Project Charter will serve as the basis of project change control and ensure that the appropriate resources are in place, and the necessary monitoring and reporting is performed.
8. It is recommended that the Project Authority ensure continuous risk planning is built into the project in which risk events are identified and mitigated over the course of the project. The development of risk plans will enable the Project Authority to prepare for factors which could delay or impede the project from reaching its objectives.	Agreed: The Project Management Framework will require that continuous risk planning be built into every complex, multi-stakeholder IT project. Specifically, a process to identify and mitigate evolving risks will be established and will include termination points should the risks be deemed to outweigh projected benefits.
9. It is recommended that the Project Authority establish financial and performance monitoring for the project. Developing monitoring plans will ensure that the Project Authority's financial investments are tracked and accounted for.	Agreed: The Project Management Framework will require that the project team design and implement the procedures necessary to collect key performance indicators for the project. The indicators, which will be outlined in the Project Management Framework, will include financial and performance monitoring indicators. The project manager will also be required to provide financial updates to senior management upon reaching every project milestone.

Theme 4: Capacity

The delivery of successful projects is based on having the capacity to deliver. The appropriate quantity and quality of appropriately skilled human resources, as

well as appropriate financial resources is needed. Moreover, the project team must have the tools and resources to involve the appropriate stakeholders. The Councils will incorporate, within the Project Management Framework, a step for assessing the resource requirements required to successfully deliver a project and comparing these with the available resource pool. Specifically:

- Resource requirements must be defined and dedicated to the project before it starts.
- Functional managers must actively work with project managers to identify mitigation strategies for those times when project team members become unavailable due to shifts in corporate priorities.
- Resource requirements must be monitored and addressed on an ongoing basis throughout the life cycle of the project with particular attention paid to ensuring that appropriately skilled human resources are available throughout its duration.

Recommendation	Management Response
10. Conduct a gap or capacity analysis to ensure that the project is staffed with the appropriate number of human resources who possess the right skill sets.	Agreed: The Project Management Framework will require that a resource capacity and gap analysis be conducted as part of the business case development for all complex, multi-stakeholder IT projects.

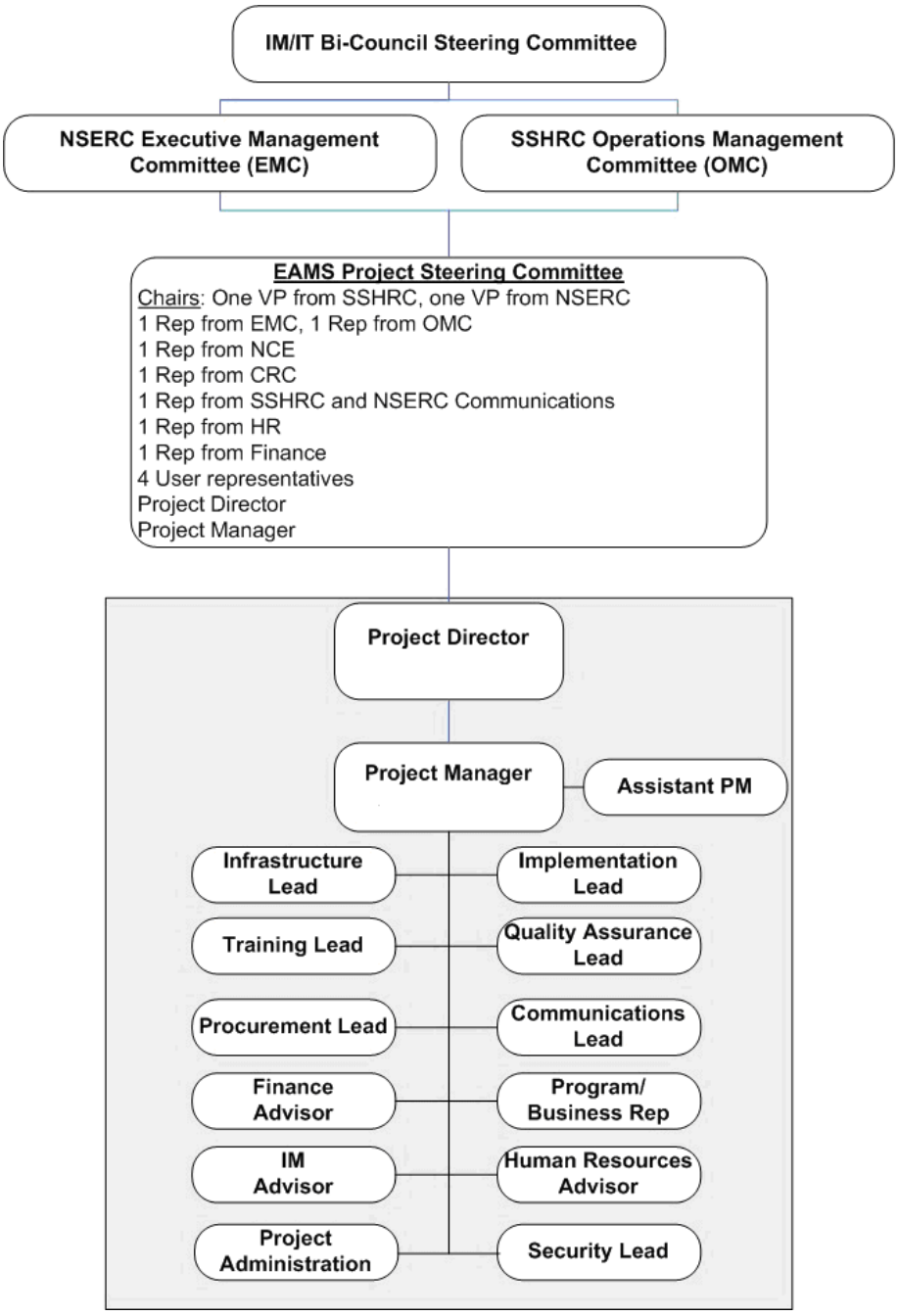
7. CONCLUSION

As the Councils grow and evolve, it is imperative that the EAMS project moves forward and achieves success. As such, it is within the best interest of the Councils to take the steps necessary to ensure EAMS offers a tool that will address external clients' needs and the Councils' business requirements.
The challenges encountered over the course of the EAMS project constitute a loss in economy and efficiency for the Councils. Despite this, the shortfalls of the project present opportunities for the future. Through greater analysis and careful selection of technology and planning, a new approach for EAMS can grant the Councils greater assurance that their future investments will add value to their business and produce the benefits desired.

APPENDIX I- Audit Criteria and Sources

Audit Criteria	Sources
1) EAMS should include a comprehensive governance structure to ensure efficiency and project completion.	Treasury Board Secretariat (TBS) Project Management Policy - Appendix B: Guidelines on Basic Concepts for Project Management
2) Selection and procurement practices should have followed government policy to ensure equitable tendering and transparent selection of the most appropriate products.	TBS Contracting Policy Public Works and Government Services Canada (PWGSC) Supply Manual
3) The project should be planned with regard for efficiency, economy and risk to ensure successful completion.	TBS Project Management Policy TBS Risk Management Policy
4) The project should have considered organizational capacity and its limitations in the development of the project to ensure successful completion.	TBS Project Management Policy

APPENDIX II - Project Governance Structure



APPENDIX III - EAMS Project: Fiscal Year Non-Salary Costs

Non-salary costs	2008/2009		2009/2010**		Total	
	Costs	**%**	**Costs**	**%**	**Costs**	**%**
FRSQ MOU Costs:						
Licensing and Support	$ 102,000	8%	$ 0	0%	$ 102,000	5%
Maintenance	83,967	7%	99,964	16%	183,931	10%
Integration and Support	927,059	71%	302,719	47%	1,229,778	63%
Total FRSQ MOU costs:	$1,113,026		$402,683		$1,515,709	
Professional Services	$ 184,456	14%	$238,570	37%	$ 423,026	22%
Total non-salary costs:	**$1,297,482**	**100%**	**$641,253**	**100%**	**$1,938,735**	**100%**

**Financial information based on April 2009 to October 2009

Audit Team:

Lead Auditor:	John-Patrick Moore
Chief Audit Executive:	Phat Do
Auditor:	Amrinder Singh