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Social Sciences and Humanities Research Council

Review of AMIS
Final Report

April 28, 2006

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1. Executive Summary

1.1 Introduction and Background

SSHRC is an arm's-length federal agency that promotes and supports university-based research and training in the social sciences and humanities. Created by an Act of Parliament in 1977, SSHRC is governed by a 22-member Council that reports to Parliament through the Minister of Industry.

SSHRC has utilized the Awards Management Information System (AMIS) since 1999 for the processing and storage of grants and fellowships applications from researchers and students. Data dating back to 1992 was converting into AMIS from a predecessor system. AMIS was custom built in PowerBuilder and utilizes a Sybase database. AMIS contains approximately 89,000 grants and fellowships application records and over 133,000 resumes of researchers and assessors. AMIS is used in each stage of the grant and fellowship process, including the review of applications; the identification and selection of assessors; the award and payment of grants and fellowships; tracking of related files; adjustment and monitoring of grants and fellowships; and provision of statistics on program outputs for management decision-making and for reporting to Parliament and to academia. AMIS supports 288 internal users and approximately 48,000 active external clients who have access to the web front-end to enter data online via web forms developed by the Electronic Service Delivery (ESD) group.

The objective of this review was to "*assess the adequacy of the actions being taken to ensure the effectiveness of AMIS in meeting its operational needs"*. The lines of inquiry used as the basis for this review are from the five following areas:

1. Vision and Strategic Direction
2. Governance and Accountability
3. Business Requirements
4. System's Maintenance
5. Change and Problem Management

Additional details on the lines of inquiry are provided in Appendix A.

The review is of a consultative nature and was based on several interviews with a cross-section of stakeholders throughout SSHRC (refer to Appendix B) and a review of relevant documentation provided by SSHRC (refer to Appendix C). The review is not intended to provide audit-level assurance.

1.2 Findings

1.2.1 Overall Conclusions

Based on the information gathered throughout the review process, it appears that the actions being taken to ensure the effectiveness of AMIS in meeting SSHRC's operational needs ***are not currently adequate.***

1. Our **vision and strategic direction**-related findings indicate that there is no documented Information Systems Division (ISD) vision and strategic direction to ensure AMIS is in line with the corporate business strategy and priorities.

2. Our **governance and accountability**-related findings indicate that the current governance structures for AMIS are ineffective at setting clear strategic direction for AMIS, for requiring

accountability for performance in executing that direction, and for managing and monitoring the full AMIS lifecycle.

3. Our **business requirements**-related findings indicate that the present business requirement change management process does not support the effective and timely capture, approval, and deployment of business requested changes for AMIS.

4. Our **system's maintenance**-related findings indicate that, while AMIS' system maintenance processes have been effective at keeping AMIS reliable and available, the lack of an AMIS owner and of performance reporting on AMIS has not permitted an effective monitoring process.

5. Our **change and problem management**-related findings indicate that the current change management processes adequately support effective problem management for AMIS. While processes around business requirement change management are currently inadequate (refer to point 3 above), the enhancements proposed by ISD to the change management processes have been designed to address the identified weaknesses.

The recommendations detailed below provide clear indications of opportunities for improvement.

1.2.2 Strengths

Some of the strengths identified through the review process in the five areas listed above include:

- Most interviewees believe that AMIS meets the basic, current needs of the Council adequately, in particular with regard to Standard Research Grants;
- AMIS is a mature application (approximately 5 years old) and according to senior ISD management requires little senior management oversight and direction to keep it going. User perceptions of the reliability and availability of AMIS were consistently positive across the interviews conducted for this review;
- ISD has identified weaknesses in the business requirement capture, approval, and deployment process and is proposing a new process to address the identified weaknesses; and,
- Those interviewed were very satisfied with the level and quality of service received from the help desk for AMIS related inquiries.

1.2.3 Opportunities for Improvement

The following table summarizes the identified opportunities for improvement, impacts and recommendations.

Observations	Impacts(s)	Recommendation(s)
Strategic Direction There is currently no strategic planning for ISD that encompasses AMIS, and it is unclear how AMIS will evolve to support the strategic direction of SSHRC. It does not appear that AMIS can expand to support the Council's strategic direction; however, alternatives for replacing AMIS have not been formally assessed. AMIS' shortcomings are partly evidenced by its relatively dated technological platform, other systems developed at SSHRC (e.g. Chairs Information Management System (CIMS)), and its shortcomings as an information management tool.	The lack of strategic planning by ISD in support of the overall strategic plan for SSHRC increases the risk of misalignment between the Council's strategic direction and the evolution of AMIS. Furthermore, AMIS is based on relatively dated client/server technology that does not easily extend to a web-based platform that would permit more interoperability with external stakeholders. Such interoperability and greater information management capabilities will further help the Council in its journey towards becoming a "Knowledge Council".	We recommend that ISD perform strategic planning to ensure it is aligned with the Council's strategic direction. We recommend to the AMIS owner that business requirements should be documented to support the strategic direction, and SSHRC should then assess what technological tools can best support these requirements, which could be an updated form of AMIS or alternatives. Alternatives could include Commercial-Off-The-Shelf (COTS) offerings, or custom development platforms such as ResearchNet for some requirements (refer to section 2.3.4). SSHRC should also consider seeking input from other organizations that have recently implemented awards management systems to understand how recent technological advancements can better meet identified business requirements. As further discussed in section 3.3.4, such business requirements should encompass both AMIS and ESD/Web Forms as both are integral parts of the same business process.

Observations	Impacts(s)	Recommendation(s)
AMIS Governance The current governance structures for AMIS are not centralized; do not have clearly defined and commonly understood roles and responsibilities; have authorities that are limited to AMIS and do not cover related elements such as electronic forms; and have not convened as regularly or with the appropriate quorum that was needed. Consequently, alternative approval and decision bodies, such as the Programs Coordination Committee (PCC) are used, and alternative approval processes, such as contacting AMIS developers directly, are used by the AMIS user community. In addition, due to unclear AMIS ownership, projects directly impacting on the future of AMIS such as ResearchNet are not systematically discussed and approved in the AMIS governance structure.	The lack of one central decision making body for AMIS increases the risk that decisions will be taken affecting AMIS that are not coordinated across the organization and/or that are inconsistent with SSHRC's longer term vision.	We recommend that the SSHRC Management Committee designate an application owner for AMIS within the user community, ideally at the Vice President level. The Management Committee should clearly outline the AMIS lifecycle accountabilities, responsibilities, and authorities of the new AMIS application owner. We recommend that the new AMIS application owner work with the Director General of Common Administrative Services Directorate (DG CASD) to determine how AMIS lifecycle planning and performance reporting will be effectively and efficiently incorporated into the proposed new IM/IT governance framework for SSHRC and NSERC. The new AMIS application owner should chair any new governance body that will be tasked with oversight of AMIS and/or the replacement of AMIS based on strategic planning and business requirements definition exercises. We recommend that the new governance structure for AMIS also encompass Web Forms/ESD. The current segregation between AMIS and ESD is more a function of the different technological platforms and user community related to the two environments; however, both serve the same purpose of managing award-related information for SSHRC and its various stakeholders. A change in AMIS affects ESD and vice versa, and consequently, they should be managed integrally. We further recommend that the AMIS User Requirements Group (URG) be reconstituted with a new mandate and revised membership at a senior enough level to support its new delegated authority (*refer to Section 3.4*), which should include the prioritization and approval of business requirements change requests.

Observations	Impacts(s)	Recommendation(s)
Data Ownership[1] Roles and responsibilities for data ownership and administration are not communicated and commonly understood across SSHRC. For example, the Data Administration group of ISD is tasked with ensuring the currency and integrity of the institutional master data within AMIS. Additionally, interview participants commonly agreed that Finance owns all financial information relating to grant awards. It is not commonly understood, however, who within SSHRC owns the remainder of the data within AMIS.	This lack of clarity significantly increases the difficulty and resources required to maintain data integrity within AMIS and risks decreasing the reliability of the information and knowledge extracted from the system by users who conduct enhanced queries using the Business Objects application.	We recommend that the new application owner for AMIS, as de facto owner of AMIS data (*refer to Appendix D – Role and Responsibilities of Application Owner)* clearly delegates ownership of sub-sets of AMIS data to the appropriate parties, to ensure the currency and integrity of AMIS data.
Risk Management Largely due to a lack of clear accountability, risk management activities have not been integrated into the AMIS governance structure.	The lack of risk management activities increases the risk that AMIS-related risks will not be appropriately identified and mitigated, as required by TBS policies such as the Risk Management Policy, the Government Security Policy, and the Privacy Impact Assessment Policy.	The new AMIS application owner, in consultation with the SSHRC Management Committee, should clearly define responsibilities for AMIS-related risk management activities, such as the conduct of a Threat and Risk Assessment and a Privacy Impact Assessment for AMIS. As the AMIS database contains a significant amount of sensitive personal information, consideration should also be given to the identification of a privacy/security champion for AMIS.
Business Requirements Approval Authority There is currently a lack of a clearly defined process and authorities to capture, approve and prioritize AMIS-related business requirements.	This increases the risk that some business requirements will not be captured, that lower priority business requirements will be implemented in advance of higher priority requirements, or that requirements will be implemented that are not consistent with management's intentions.	We recommend that the URG be given authority delegated by the AMIS application owner (or ideally that URG be chaired by the AMIS owner), within risk-based prescribed limits, to prioritize and approve business requirements change requests based on a cost/benefit analysis. For example, this could mean that only requirements that are assessed as having a "high" impact on AMIS would require approval from the IM/IT Steering Committee. All other requirement change requests would be approved directly at URG. We recommend that the new AMIS governance structure discuss and approve a revised business requirements capture, approval and prioritization process.

[1] *For the purposes of this report, data ownership refers to the ultimate accountability assigned to an individual or position to ensure controls are in place to appropriately manage and ensure the confidentiality, integrity and availability of such data.*

Observations	Impacts(s)	Recommendation(s)
Proposed Change Management Process Enhancements It does not appear that the proposed enhancements by ISD to the change management processes (refer to Section 2.3.2) have been formally approved by Senior Management.	The lack of a formal approval could result in changes to the process that are not consistent with management's intentions. This risk is further increased by other governance-related changes that are concurrently being proposed at the Senior Management level that may impact AMIS and create a disconnect between the two sets of proposed changes.	We recommend that formal approval be obtained by ISD from the DG CASD and the reconstituted URG (*refer to Section 3.3*) for the proposed enhancements to the change and problem management processes.
Business Requirements List The current list of outstanding change requests for AMIS is not reflective of all of SSHRC's AMIS-related business requirements. For example, users go outside the current change request process and request changes directly from ISD staff, or use other systems (e.g. CIMS) to meet their business requirements.	This increases the risk that SSHRC will not be making AMIS planning and replacement decisions based on a comprehensive set of business requirements.	We recommend to the AMIS owner that a comprehensive exercise be conducted to gather all business requirements from the AMIS and ESD user community, including those that are currently fulfilled by other systems. These business requirements should be aligned with SSHRC's vision and strategic plan.
Performance Reporting ISD does not provide regular AMIS performance reporting to the AMIS user community or senior management of SSHRC, and no reporting requirement has been incorporated into the overall Service Level Agreement (SLA) between ISD and SSHRC/NSERC.	A lack of performance reporting does not allow the user community to effectively monitor compliance with the SLA and ensure an optimal use of resource.	We recommend that, once an AMIS owner has been clearly identified, performance reporting on AMIS be provided by ISD to the AMIS owner on a regular basis. The SLA should also be amended to clearly reflect performance reporting requirements. Reporting could include items such as: • Statistics on # of problems and change requests completed and outstanding (by order of priority); • Statistics on time to complete requests and related costs; • % of achievement of service levels; and, • Statistics on system uptime, etc.

1.3 Next Steps

Of the various opportunities for improvement noted above, we recommend that SSHRC first identify an application owner for AMIS. As all of the other opportunities for improvement noted will significantly affect AMIS and consequently its owner, the owner should be significantly involved in the implementation of the various recommendations, and in shaping how AMIS can be a strong foundational element to SSHRC's strategic vision of becoming a "Knowledge Council". Failure to find a fully engaged application owner for AMIS significantly increases the risk that the implementation of the recommendations suggested herein will not be successful. Appendix D provides an overview of an application owner's role and responsibilities.

2. Introduction and Background

2.1 Review Objectives, Scope, Approach and Timelines

The objective of this review was to "*assess the adequacy of the actions being taken to ensure the effectiveness of AMIS in meeting its operational needs*". The lines of inquiry used as the basis for this review are from the five following areas:

1. Vision and Strategic Direction
2. Governance and Accountability
3. Business Requirements
4. System's Maintenance
5. Change and Problem Management

Additional details on the lines of inquiry are provided in Appendix A.

The review is of a consultative nature and was based on several interviews with a cross-section of stakeholders throughout SSHRC (refer to Appendix A) held between December 2005 and January 2006. Relevant documentation provided by SSHRC (refer to Appendix B) was also reviewed. The review is not intended to provide audit-level assurance.

2.2 Current AMIS Governance

2.2.1 Organizational Structure

Common Administrative Services Directorate (CASD)

The Common Administrative Services Directorate (CASD) is a shared services initiative created in 1995 between SSHRC and the Natural Sciences and Engineering Research Council (NSERC). AMIS is supported by the Information Systems Division (ISD) within CASD.

Information Systems Division (ISD)

ISD employs 55 full time resources (18 from SSHRC and 37 from NSERC), and is organized into five functional areas. The role of each area *with respect to* AMIS is outlined below:

- *Data Administration* – involved in managing the data in AMIS. Although not responsible for data entry[2], if data entry/verification requires the creation of a new organization in AMIS, for example, this request is sent to Data Administration to create this new organization within AMIS. Data Administration also modifies the information associated with current organizations within the system if required (e.g., address change) and/or deletes identified duplicate records.
- *Support Centre* - includes first and second level help desk support for AMIS to internal SSHRC personnel.
- *Technical Services* – supports AMIS' technical infrastructure and ensures service levels are maintained.

[2] Information Management under the Administration division within CASD is responsible for the management of SSHRC's information. The Client Service Section of Information Management processes applications for SSHRC.

- *Systems/Application Development Area (One)* – responsible for the development and support of AMIS.
- *Systems/Application Development Area (Two)* – provides help desk support for SSHRC ESD online application users (usually applicants, etc. that are external to SSHRC).

Figure 1 provides an overview of the organizational structure for CASD, including ISD.

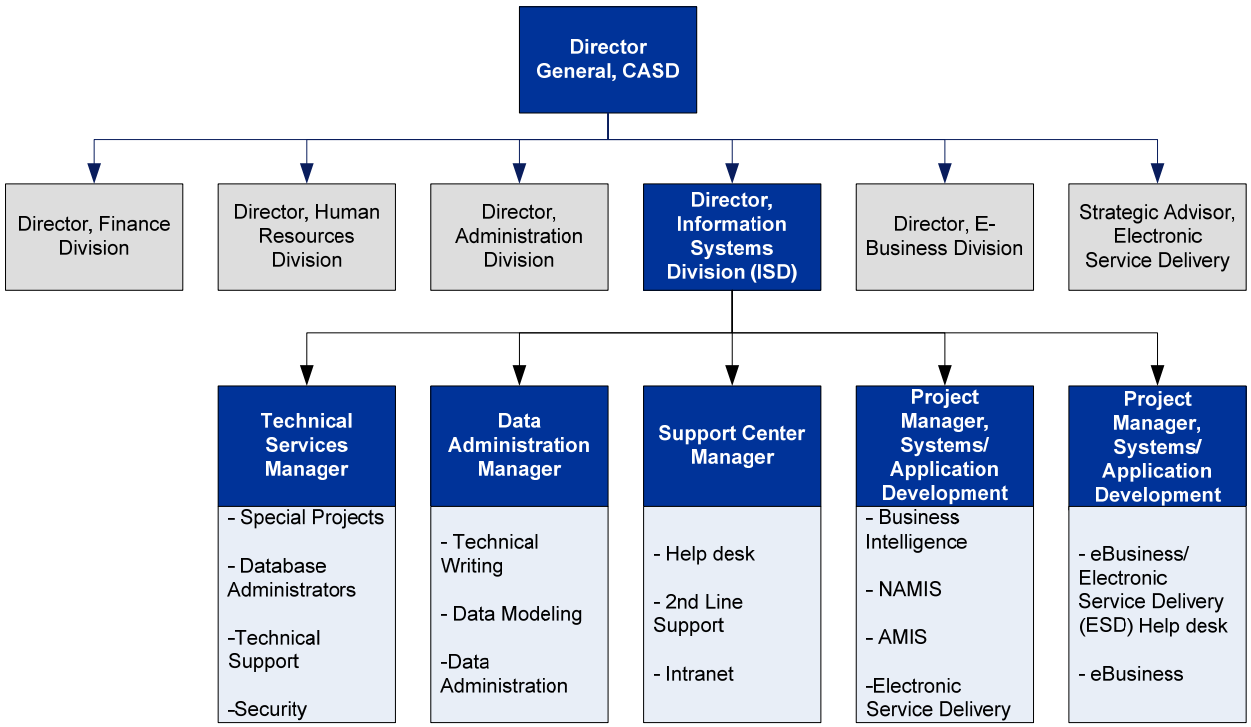

Figure 1 – Organization Structure

The Director General of CASD is currently considering the implementation of a new organizational structure for CASD, including developing a new Chief Information Officer (CIO) role responsible for all CASD IT-related services and reporting to the Director General, CASD. An ESD strategic advisor has also recently been hired, but has not provided input into this report due to the novelty of the position.

Electronic Service Delivery (ESD)

The ESD Project Office is responsible for the development of an integrated long-term vision and electronic services delivery strategy which will position SSHRC to facilitate information (and data) exchange with the research community, while also reducing the administrative burden on staff involved in the grant selection administrative process. The ESD Project Office reports to the VP Programs, outside of CASD.

SSHRC receives more than 90 per cent of its grant applications, for more than 30 programs, on-line. ESD is responsible for the development of the web forms used by grant applicants to submit their applications, via the SSHRC website, to SSHRC. SSHRC maintains over 40 different web forms for its different grant programs. Web form data is downloaded to a validation area (a "web" database separate from the "corporate" AMIS database). There is a data transfer from the "web" database to the AMIS database.

2.2.2 Governance Model/ Committee Structure

Based upon the interview process, there was a general consensus that AMIS does not have a clearly defined application owner from the user community. Interview participants were unable to clearly identify who outside of CASD and more specifically outside of ISD is responsible and accountable for the overall management, planning and oversight of AMIS.

Data ownership has been defined for the two (2) most important data sets in AMIS: the Data Administration group (as described above) of ISD owns institutional master data and Finance owns all financial award related data; however, owners of Program-related data (grant application summaries, CV's, etc.) have not been identified and communicated.

The current governance model for AMIS incorporates three (3) separate committees and/or working groups as follows: ESD Steering Committee; AMIS User Requirements Group (URG); and, Competition Operations Working Group (COWG).

- ***ESD Steering Committee -*** Created in 2001 and chaired by the VP Programs, it is intended to be a high level governance body that provides ongoing guidance and direction for SSHRC's electronic service delivery. The ESD Steering Committee has met infrequently over the last year and those interviewed believed that the Committee had been more focused on tactical issues, as opposed to strategic issues.
- ***AMIS User Requirements Group (URG)*** - URG was first established during the AMIS design project in order to make design and development decisions. URG is supposed to escalate issues to the ESD Steering Committee for decision and resolution. Generally, those interviewed felt that URG was currently ineffective as it does not have the right level of staff (manager and above) to have the appropriate authority to make the required decisions. At times URG has been chaired by staff members (below manager level) and by ISD personnel as opposed to a manager representing the user community. In some instances, individuals interviewed indicated they have attempted to use other SSHRC committees, for example the Programs Coordination Committee (PCC), for change management approvals (i.e., web form and AMIS change approvals). This falls outside the mandate of the PCC which is an assistant director level committee which discusses the harmonization of program policies.
- ***Competition Operations Working Group (COWG)*** - Created in the year 2000, it is an operational level user group comprising administrative assistants, and intended to be a forum for discussing operational program delivery-related issues, a number of which concern AMIS. Currently there is a large overlap in membership between URG and COWG.

Change requests are supposed to start at COWG, get raised to URG and then be approved by the ESD Committee. As the composition and meeting frequency of these groups have not been optimal, however, a clearly documented and agreed upon process does not exist to evaluate, prioritize and approve business requested changes (refer to Section 2.3 for additional details).

Figure 2 provides the current governance structure for AMIS.

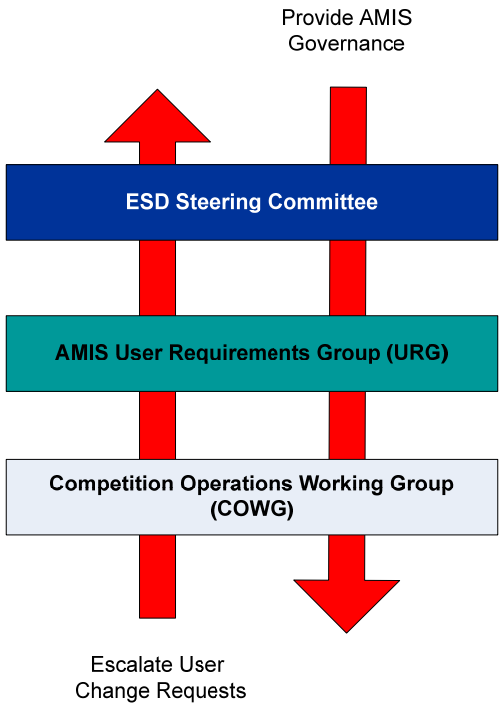

Figure 2 – AMIS Governance Structure

The Director General of CASD is currently considering the implementation of a new governance and accountability framework for IM/IT across both NSERC and SSHRC. The intent of this framework is to simplify, streamline and clarify the governance and organization of the IM/IT function within CASD and to provide more transparency in the IM/IT decision making process. As part of this change, the establishment of a new Bi-Council Information Management/Information Technology Steering Committee is proposed to provide overall oversight and strategic direction for IM/IT in both Councils.

2.3 Current AMIS Life-Cycle Management

2.3.1 Help Desk

Separate help desks exist for internal users of AMIS and online application users (i.e., ESD). The internal ISD help desk (managed by the Support Centre of ISD) provides first and second level help desk support for AMIS to internal SSHRC personnel. Users may e-mail or call the help desk. Since September 2005 the help desk has been using ClearQuest to manage change requests.

For data-fix related problems, there is also a dedicated mailbox for “help desk DBA” to which users can mail their requests directly. The three (3) ISD Database Administrators (DBAs) have access to this mailbox. The DBAs do not have the ability to create a ticket in ClearQuest. For those requests that go straight to the DBA help desk inbox, the DBAs copy the AMIS support team on their reply to the user (the ISD help desk does not always create a ticket at this time). If the data-fix related problem was first brought to the attention of the ISD help desk and they created a ticket, they would forward the ticket to the DBAs. In these instances the DBAs could change and close the ticket. Additionally, the DBAs indicated during interviews that at times e-mails are directed to their individual e-mail inboxes and not the “help desk DBA” inbox.

In addition, there may be more than one instance of ClearQuest (i.e., that used by ISD help desk, AMIS Quality Assurance (QA), and ESD help desk). As indicated above, tickets may not be created for all support requests nor are there processes in place to ensure accountability for tracking and monitoring the support requests.

2.3.2 Change Management Process

ISD has an established Problem Reporting process (i.e., "Break/Fix" reports, not user change requests). This process is as follows:

- The help desk receives a call regarding an AMIS problem;
- The help desk logs the call in ClearQuest and attempts to resolve the problem;
- If no resolution is possible, the problem report is sent to the Development Team for resolution; and,
- Problem Report fixes are approved by the Development Team Leader.

A clearly documented and agreed upon process does not exist to evaluate, prioritize and approve user/business requested changes. There is a dedicated help desk mailbox for AMIS change requests. AMIS QA personnel review the e-mail received in this inbox (there are four (4) QA individuals for AMIS/NAMIS). As URG has not been meeting frequently the AMIS Development Team Leader has been prioritizing these requests himself.

There is no formal user acceptance testing or sign-offs for changes made to AMIS. Currently there is no release schedule for AMIS; releases occur on an ad-hoc basis as changes are made to AMIS.

ISD is currently developing a new process for change requests. The process is similar to the one currently utilized for NAMIS[3]. The proposed process is outlined below:

- There will be a new monthly release schedule for AMIS;
- Change requests will be submitted by users through the AMIS help desk and will be logged into ClearQuest;
- An impact assessment will be conducted by ISD;
- ClearQuest tickets, with assessments, will be compiled and given to URG for prioritization and approval;
- Once approved, the requests will be assigned to a developer;
- Once completed, the enhancement will undergo QA in the test environments;
- Manager level approval will be obtained from the appropriate user representative prior to the enhancement being moved into production; and,
- Monthly Release Notes will be issued.

It is currently unclear how ISD plans to seek management approval for the implementation of the new process.

[3] ISD personnel are beginning to play the same role for both AMIS and NAMIS, the corporate application used by NSERC. For example, the new Application Development Team Leader for AMIS also is the Team Leader for NAMIS.

Figure 3 provides a description of the proposed change request process indicating the roles of the three main stakeholders (AMIS users, ISD, and governance bodies). In addition, notes on the weaknesses identified with the current process are provided in *italics* throughout the relevant sections of the process diagram.

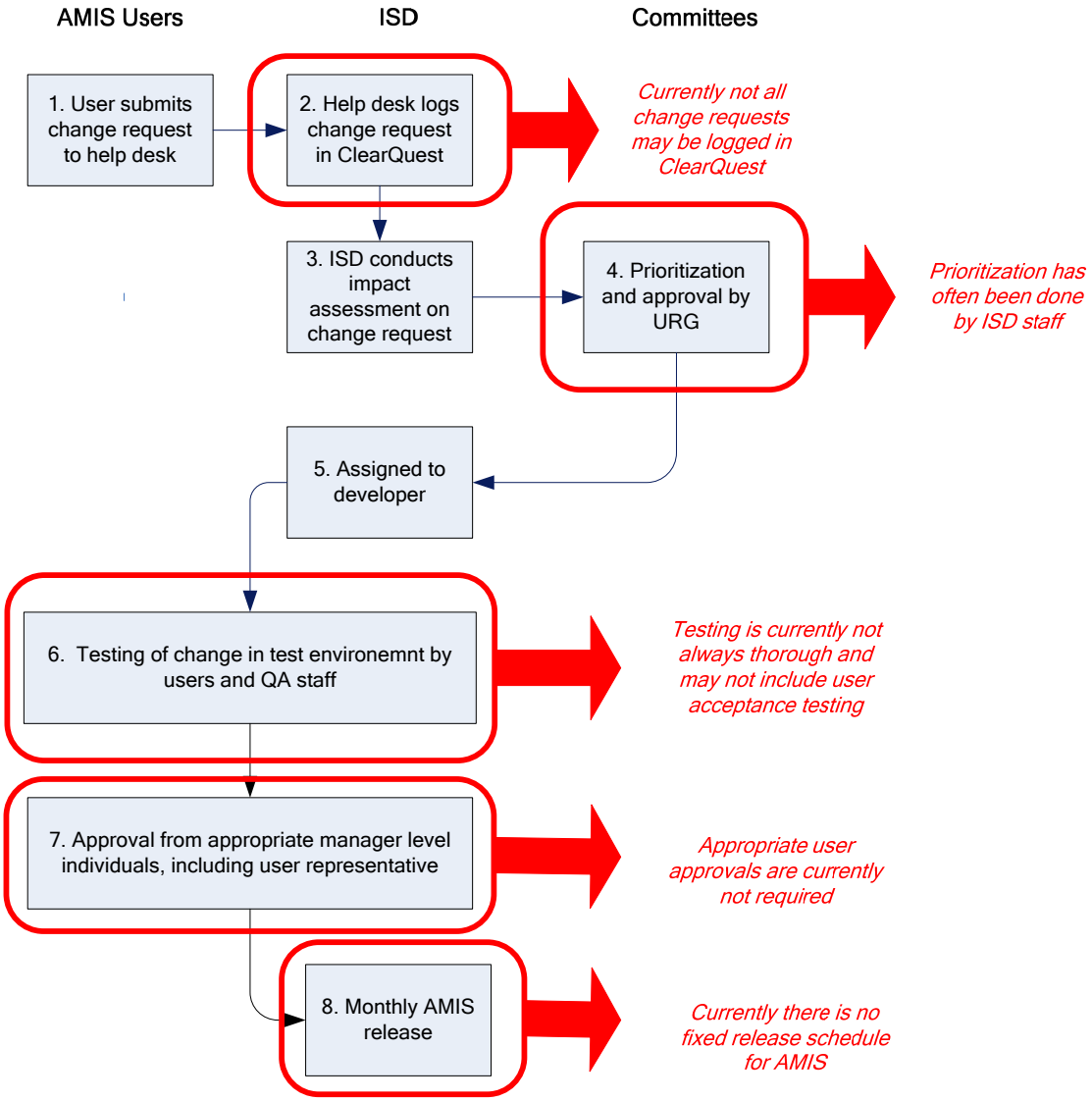

Figure 3 – Change Management Process

2.3.3 ESD Web Form Changes

There is a separate, defined process to develop and request ESD web form changes. This includes e-mail approvals from user representatives before changes are moved into production and consultations with ISD staff. Formal ISD approval is not obtained. An Excel spreadsheet is used to track and coordinate changes. During the interview process it was indicated that a lack of a formal process hindered the ESD group's responsiveness to individuals requesting changes. There is now a form to fill out for change requests. Those interviewed indicated that a stronger link is needed between ESD and program areas to ensure program requirements are coordinated with ESD web form creation and maintenance.

2.3.4 ResearchNet

The Research and Dissemination Grants division of SSHRC is currently involved in a pilot project using the Canadian Institutes of Health Research's (CIHR) ResearchNet which involves external assessors being able to enter their evaluations of applications online. ResearchNet is being used to reduce the excessive volume of paper used in the grant evaluation process and to increase the ease by which grant evaluators can conduct their assessments. Specifically, for the external assessor portion of the grant assessment and approval process, external assessors are now receiving their grant information packages and entering their evaluations online using ResearchNet. Conversely, assistants at SSHRC are doing manual data entry into AMIS.

Additionally, Selection Committee members also have electronic access to the external assessors' reports through ResearchNet. Currently, four Selection Committees are involved in this pilot project. It is anticipated that the pilot will process approximately 600 applications in total.

Upfront costs (i.e., staff costs) for this pilot are shared between the Research and Dissemination Grants division and ISD.

It has also been noted that a second pilot project has been undertaken with the Fellowships Program.

3. Findings

Section 3 provides first an overall conclusion on findings. Specific findings under each of the 5 areas of inquiry are then provided. Recommendations in each of the areas are supplemented with:

- Expected practices derived from Deloitte's General Computer Control Methodology as well as the Information Systems Audit and Control Association (ISACA)'s Control Objectives for Information and related Technology (COBIT); and,
- A summary of the relevant practices and strengths currently in place at SSHRC.

3.1 Overall Conclusion

Based on the information gathered throughout the review process, it appears that the actions being taken to ensure the effectiveness of AMIS in meeting SSHRC's operational needs are not currently adequate. The recommendations detailed in the following sections provide clear indications of opportunities for improvement in the areas of:

- Vision and Strategic Direction;
- Governance and Accountability;
- Business Requirements;
- System's Maintenance; and,
- Change and Problem Management.

3.2 Vision and Strategic Direction

Setting an IT vision and strategic direction is required to manage and direct all IT resources in line with the business strategy and priorities. The IT function and business stakeholders are responsible for ensuring that optimal value is realised from project and service portfolios such as AMIS.

3.2.1 Expected Practices

The following are expected practices in the area of vision and strategic direction, as derived from Deloitte's General Computer Control methodology, as well as COBIT from ISACA:

- Information systems strategies, plans, and budgets are consistent with the entity's business and strategic goals. (Deloitte - General Computer Controls methodology)
- *Define a Strategic IT Plan* - The strategic plan should improve key stakeholders' understanding of IT opportunities and limitations, assess current performance and clarify the level of investment required. The business strategy and priorities are to be reflected in portfolios and executed by the IT tactical plan(s), which establishes concise objectives, plans and tasks understood and accepted by both business and IT (COBIT)
- *Assess Current Performance* - Assess the performance of the existing plans and information stability, complexity, costs, strengths and weaknesses. (COBIT)

3.2.2 Summary of Current Practices

The following points highlight the current practices at SSHRC, based on the interviews performed and the documentation reviewed.

- As could be expected, only interviewees at the senior levels had input to provide around vision and strategic direction;
- SSHRC has recently completed a Strategic Plan for 2006-2011, and the major component of the plan is for SSHRC to become a "Knowledge Council". This will require SSHRC to enhance relationships with various stakeholders such as the international research community, Universities and the Canadian public at large;
- A vision and strategic/tactical plan has not been developed specifically for AMIS. ISD also does not have a long-term strategic plan either; however, one may be developed within the next year. Consequently, there has been no long term AMIS planning conducted at SSHRC;
- Most interviewees believe that AMIS meets the basic needs of the Council adequately, in particular with regard to Research and Dissemination Grants, as AMIS was originally developed based on the needs of that group;
- A number of interviewees believe that AMIS is not flexible enough to accommodate all of the Council's diverse needs. The Canada Research Chairs section developed its own Chairs Information Management System (CIMS) as it believed AMIS would not be flexible enough to accommodate its need to interact with groups of researchers and institutions. It is believed that AMIS best manages relationships with individual researchers;
- There is a perception that AMIS was originally designed for Standard Research Grants and does not respond as well to the requirements of other program areas. For example, for the Initiative on the New Economy (INE) corporate memberships must be entered as programs in AMIS because of the system's current configuration. In addition, under committee members only two (2) can be listed; however, that limit does not apply for all programs;
- Some interviewees pointed to workarounds being used for functionality that is not currently in AMIS. For example, AMIS limits the number of individuals that can be listed for a review committee, so spreadsheets are utilized to capture the complete list of committee members for those programs utilizing additional members;
- Senior officials pointed to the difficulty in obtaining the appropriate information out of AMIS for decision-making purposes. They perceive AMIS to be outdated and not able to fulfill SSHRC's vision to become the "Knowledge Council";
- Senior officials would like AMIS to provide greater automated workflow tools, increased interoperability with outside stakeholders, and increased knowledge management capabilities (e.g., ability to easily extract business relevant information and knowledge);
- AMIS is based on relatively dated client/server technology. The ESD group partly addressed this concern by adding web front-end functionality, but the fact that the web front-end is not fully integrated with AMIS adds to the complexity of maintaining both AMIS and the web front-end; and,
- As a whole, SSHRC is moving to a Microsoft .Net platform. This will have to be incorporated into any AMIS replacement planning.

3.2.3 Strengths

- Most interviewees believe that AMIS meets the basic, current needs of the Council adequately, in particular with regard to Research and Dissemination Grants; and,
- AMIS is a mature application (approximately 5 years old) and according to senior ISD management requires little senior management oversight and direction to keep it going. User perceptions of the reliability and availability of AMIS were consistently positive across the interviews conducted for this review.

3.2.4 Vision and Strategic Direction Opportunities for Improvement

Overall, our vision and strategic direction-related findings indicate that there is no documented ISD vision and strategic direction to ensure AMIS is in line with the business strategy and priorities.

Observations	Impacts(s)	Recommendation(s)
Strategic Direction There is currently no strategic planning for ISD that encompasses AMIS, and it is unclear how AMIS will evolve to support the strategic direction of SSHRC. It does not appear that AMIS can expand to support the Council's strategic direction; however, alternatives for replacing AMIS have not been formally assessed. AMIS' shortcomings are partly evidenced by its relatively dated technological platform, other systems developed at SSHRC (e.g. Chairs Information Management System (CIMS)), and its shortcomings as an information management tool.	The lack of strategic planning by ISD in support of the overall strategic plan for SSHRC increases the risk of misalignment between the Council's strategic direction and the evolution of AMIS. Furthermore, AMIS is based on relatively dated client/server technology that does not easily extend to a web-based platform that would permit more interoperability with external stakeholders. Such interoperability and greater information management capabilities will further help the Council in its journey towards becoming a "Knowledge Council".	We recommend that ISD perform strategic planning to ensure it is aligned with the Council's strategic direction. We recommend to the AMIS owner that business requirements should be documented to support the strategic direction, and SSHRC should then assess what technological tools can best support these requirements, which could be an updated form of AMIS or alternatives. Alternatives could include Commercial-Off-The-Shelf (COTS) offerings, or custom development platforms such as ResearchNet for some requirements (refer to section 2.3.4). SSHRC should also consider seeking input from other organizations that have recently implemented awards management systems to understand how recent technological advancements can better meet identified business requirements. As further discussed in section 3.3.4, such business requirements should encompass both AMIS and ESD/Web Forms as both are integral parts of the same business process.
Management Response		

3.3 Governance and Accountability

An IT organization must be defined considering requirements for staff, skills, functions, accountability, authority, roles and responsibilities, and supervision. This organization is to be embedded into an IT process framework that ensures transparency and control as well as the involvement of senior executives and business management. A strategy committee should ensure board oversight of IT and one or more steering committees, in which business and IT participate, should determine prioritisation of IT resources in line with business needs. Processes, administrative policies and procedures need to be in place for all functions and systems such as AMIS, with specific attention to control, quality assurance, risk management, information security, data and systems ownership, and segregation of duties. To ensure timely support of business requirements, IT should also be involved in relevant decision processes.

3.3.1 Expected Practices

The following are expected practices in the area of governance and accountability, as derived from Deloitte's General Computer Control methodology, as well as COBIT from ISACA:

- The organization's senior management should appoint a planning or steering committee to oversee the IT function and its activities. Committee membership should include representatives from senior management, user management and the IT function. The committee should meet regularly and report to senior management. *(COBIT)*
- Management should ensure that all personnel in the organization have and know their roles and responsibilities in relation to information systems. All personnel should have sufficient authority to exercise the role and responsibility assigned to them. Roles should be designed with consideration to appropriate segregation of duties. No single individual should control all key aspects of a transaction or event. Everyone should be made aware that they have some degree of responsibility for internal control and security. Consequently, regular campaigns should be organized and undertaken to increase awareness and discipline. *(COBIT)*
- Management should ensure that all information assets (data and systems) have an appointed owner who makes decisions about classification and access rights. System owners typically delegate day-to-day custodianship to the systems delivery/operations group and delegate security responsibilities to a security administrator. Owners, however, remain accountable for the maintenance of appropriate security measures. *(COBIT)*
- IT management should undertake the necessary actions to establish and maintain an optimal coordination, communication and liaison structure between the IT function and various other interests inside and outside the IT function (i.e., users, suppliers, security officers, risk managers). *(COBIT)*
- Management should implement a process to ensure that the performance of IT resources is continuously monitored and exceptions are reported in a timely and comprehensive manner. *(COBIT)*
- IT management should define and implement costing procedures to provide management information on the costs of delivering information services while ensuring cost-effectiveness. Variances between forecasts and actual costs should be adequately analysed and reported on to facilitate the cost monitoring. In addition, management should periodically evaluate the results of the IT function's job cost accounting procedures, in light of the organization's other financial measurement systems. *(COBIT)*

3.3.2 Summary of Current Practices

- AMIS does not have a clearly defined application owner from the user community. Interview participants were unable to clearly identify who outside of CASD and more specifically outside ISD is responsible and accountable for the overall management, planning and oversight of AMIS.
- Some interviewees indicated that data quality within AMIS may be an issue stemming from the lack of clearly defined data ownership.
- As described in Section 2 of this report, the current governance model for AMIS incorporates three separate committees and/or working groups as follows: ESD Steering Committee: User Requirements Group; and, Competition Operations Working Group. Interviews participants noted that difficulties have been experienced at the ESD Steering Committee and the URG levels of this governance model. Specifically, it was noted that:
  - The ESD Steering Committee has not met in the past year. As such, the Committee has not provided strategic direction and advice for the continuing management and oversight of AMIS as originally intended; and,

  - The URG has met frequently over the past year but has experienced difficulty maintaining the appropriate level of representation from the AMIS user community. Specifically, URG has experienced difficulty maintaining a membership that has the authority to approve the changes discussed at its meetings. Additionally, it was noted that URG has recently been chaired by staff from ISD as opposed to a management representative from the AMIS user community.

- The governance framework for the creation and maintenance of electronic forms for the SSHRC website falls partially outside of the framework describe above. Specifically, the ESD Project Manager within the Program Branch often uses the Programs Coordination Committee for consultations and to seek approvals for the creation or modification of existing electronic and web forms. The use of a separate approval process for electronic and web forms is not necessarily inappropriate as AMIS and the SSHRC website are separate applications with separate databases; however, these two applications support common business processes and share common data. Consequently, changes made to electronic and web forms impact AMIS and should, at a minimum, be processed for information purposes through the AMIS governance structures and processes.
- ISD does not provide regular AMIS performance reporting to the AMIS user community or senior management of SSHRC. It should be noted, however, that ISD does provide senior management with an annual performance report for the IT function as a whole and that limited AMIS related expenditure reporting is included in this report. Additionally, it should be noted that without a clearly defined AMIS application owner from the user community it is unclear what business unit in SSHRC would have the responsibility and accountability to receive, review, and approve these reports.
- User perceptions of the reliability and availability of AMIS were consistently positive across most all interviews conducted. This level of positive response is one indication that SSHRC has committed sufficient human and financial resources for the operation and life-cycle maintenance of AMIS. The following is a high level overview of the ISD resources committed to supporting the 288 internal SSHRC AMIS users:
  - AMIS system development and maintenance: approximately 7 FTE's;
  - AMIS help desk: approximately 1.5 FTE's;
  - AMIS data administration: approximately 3 FTE's; and,
  - AMIS database administrators: approximately 1.5 FTE's.
- The Director General of CASD is currently considering the implementation of a new governance and accountability framework for IM/IT across both NSERC and SSHRC. The intent of this framework is to simplify, streamline and clarify the governance and organization of the IM/IT function within the two Councils and to provide more transparency into the IM/IT decision making process. As part of this change, the Director General is proposing to establish a new Bi-Council Information Management/Information Technology Steering Committee to provide oversight and strategic direction for IM/IT in both Councils. Through the documentation provided, however, it is unclear how AMIS governance structures and processes will fit into this new model.
- Roles and responsibilities for risk management activities have not been clearly defined.

3.3.3 Strength

- There is a clear consensus in the user community and ISD staff that changes are required to increase the effectiveness of the current AMIS governance structure. Furthermore, IT governance as a whole has been identified by senior management within SSHRC as an area requiring improvement, and attention is being paid to this issue by SSHRC senior management.

3.3.4 Governance and Accountability Opportunities for Improvement

Overall, our governance and accountability-related findings indicate that the current governance structures for AMIS are ineffective at setting clear strategic direction for AMIS, for requiring accountability for performance in executing that direction, and for managing and monitoring the full AMIS lifecycle.

Observations	Impacts(s)	Recommendation(s)
AMIS Governance The current governance structures for AMIS are not centralized; do not have clearly defined and commonly understood roles and responsibilities; have authorities that are limited to AMIS and do not cover related elements such as electronic forms; and have not convened as regularly or with the appropriate quorum that was needed. Consequently, alternative approval and decision bodies, such as the Programs Coordination Committee (PCC) are used, and alternative approval processes, such as contacting AMIS developers directly, are used by the AMIS user community. In addition, due to unclear AMIS ownership, projects directly impacting on the future of AMIS such as ResearchNet are not systematically discussed and approved in the AMIS governance structure.	The lack of one central decision making body for AMIS increases the risk that decisions will be taken affecting AMIS that are not coordinated across the organization and/or that are inconsistent with SSHRC's longer term vision.	We recommend that the SSHRC Management Committee designate an application owner for AMIS within the user community, ideally at the Vice President level. The Management Committee should clearly outline the AMIS lifecycle accountabilities, responsibilities, and authorities of the new AMIS application owner. We recommend that the new AMIS application owner work with the Director General of Common Administrative Services Directorate (DG CASD) to determine how AMIS lifecycle planning and performance reporting will be effectively and efficiently incorporated into the proposed new IM/IT governance framework for SSHRC and NSERC. The new AMIS application owner should chair any new governance body that will be tasked with oversight of AMIS and/or the replacement of AMIS based on strategic planning and business requirements definition exercises. We recommend that the new governance structure for AMIS also encompass Web Forms/ESD. The current segregation between AMIS and ESD is more a function of the different technological platforms and user community related to the two environments; however, both serve the same purpose of managing award-related information for SSHRC and its various stakeholders. A change in AMIS affects ESD and vice versa, and consequently, they should be managed integrally. We further recommend that the URG be reconstituted with a new mandate and revised membership at a senior enough level to support its new delegated authority (*refer to Section 3.4*), which should include the prioritization and approval of business requirements change requests.
Management Response		

Observations	Impacts(s)	Recommendation(s)
Data Ownership Roles and responsibilities for data ownership and administration are not communicated and commonly understood across SSHRC. For example, the Data Administration group of ISD is tasked with ensuring the currency and integrity of the institutional master data within AMIS. Additionally, interview participants commonly agreed that Finance owns all financial information relating to grant awards. It is not commonly understood, however, who within SSHRC owns the remainder of the data within AMIS.	This lack of clarity significantly increases the difficulty and resources required to maintain data integrity within AMIS and risks decreasing the reliability of the information and knowledge extracted from the system by users who conduct enhanced queries using the Business Objects application.	We recommend that the new application owner for AMIS, as de facto owner of AMIS data (*refer to Appendix D – Role and Responsibilities of Application Owner)* clearly delegates ownership of sub-sets of AMIS data to the appropriate parties, to ensure the currency and integrity of AMIS data.
Management Response		
Risk Management Largely due to a lack of clear accountability, risk management activities have not been integrated into the AMIS governance structure.	The lack of risk management activities increases the risk that AMIS-related risks will not be appropriately identified and mitigated, as required by TBS policies such as the Risk Management Policy, the Government Security Policy, and the Privacy Impact Assessment Policy.	The new AMIS application owner, in consultation with the SSHRC Management Committee, should clearly define responsibilities for AMIS-related risk management activities, such as the conduct of a Threat and Risk Assessment and a Privacy Impact Assessment for AMIS. As the AMIS database contains a significant amount of sensitive personal information, consideration should also be given to the identification of a privacy/security champion for AMIS.
Management Response		

3.4 Business Requirements

Business functional and technical requirements covering the full scope of all initiatives required to achieve the expected outcomes of an application should be identified, prioritized, specified and approved. The criteria for acceptance of the requirements should be defined. Requirements should take into account the business functional needs, the enterprise's technological direction, performance, cost, reliability, compatibility, auditability, security, availability and continuity, usability, safety and legislation. These requirements should be owned by the application owner.

3.4.1 Expected Practice

The following are expected practices in the area of business requirements, as derived from Deloitte's General Computer Control methodology, as well as COBIT from ISACA:

- The organization's management should define and implement IT standards and adopt a system development life cycle (SDLC) methodology governing the process of developing, acquiring, implementing and maintaining computerized information systems and related technology. The chosen system development life cycle methodology should be appropriate for the systems to be developed, acquired, implemented and maintained. (COBIT).
- IT management should ensure that all requests for changes, system maintenance and supplier maintenance are standardized and subject to formal change management procedures. Changes should be categorized and prioritized and specific procedures should

be in place to handle urgent matters. Change requestors should be kept informed about the status of their request. (COBIT).

- A procedure should be in place to ensure that all requests for change are assessed in a structured way for all possible impacts on the operational system and its functionality. (COBIT).
- Application systems are appropriately implemented and function consistent with management's intention. (Deloitte - General Computer Controls methodology).

3.4.2 Summary of Current Practices

- At the time of the conduct of this review, the ISD AMIS Project Manager was in the midst of introducing a new and more robust change management process to address many of the perceived weaknesses in the current business requirement capture, approval, and deployment process (see section 2.3.2).
- Prior to the proposal of the new process described above, roles and responsibilities for the business requirement capture, approval, and deployment process were not clearly understood and communicated across SSHRC. Specifically, a clear consensus does not exist amongst the AMIS user community and ISD staff regarding who or which business unit manager within SSHRC has the final authority to prioritize and approve business requirement changes. It is clearly understood that the URG has the mandate to collect and discuss changes; however, it is significantly less clear if URG has the authority to approve business requirement changes.
- Additionally, there was a consensus amongst both the AMIS user community and ISD staff that a clearly documented and agreed upon process does not exist to prioritize business requirement changes. It is important to note, however, that as a consequence of the introduction of a new change management tracking tool (ClearQuest), each current change request is assigned a severity and priority. Again, interviewees could not provide documentation that outlines the process and criteria used to prioritize business requirement change requests.
- The URG has met frequently over the past year but has experienced difficulty maintaining the appropriate level of representation from the AMIS user community. Specifically, URG has experienced difficulty maintaining a membership that has the authority to approve the changes discussed at its meetings. Additionally, it was noted that URG has recently been chaired by staff from ISD as opposed to a management representative from the AMIS user community.
- Interviewees indicated there is no formal process to escalate and resolve disputes, for example, a dispute between ISD and program areas over requested changes to AMIS.
- According to ISD personnel, there is currently no "Corporate" focus regarding the change management process and users often come to ISD with one-off requests.
- The data administration group is responsible for integrity of system data. In addition, there is a data entry procedures manual that details business rules for data integrity. Nonetheless, there was a general consensus amongst interviewees that many data errors and duplicate data still reside in the system. Those interviewed indicated a lack of defined data ownership, a lack of validation of application data in the staging area (the "web" database) and a lack of input controls.
- As part of their validation of application data, data administration personnel indicated they were concerned that at times they are moving towards screening applications based on program requirements, which they indicated should be the responsibility of program officers.
- Program officers interviewed indicated that the time lag between a request and the change being made to AMIS was in some cases years. For example, according to personnel interviewed, adding the new field "Former Principal Investigator" took 2 years; however, a review of currently outstanding AMIS change requests seems to indicate that requests are now resolved much more rapidly.

- Users cannot perform ad hoc queries on AMIS directly but must use a tool called Business Objects (BO). In addition to standardized reports there is a part-time contractor available to generate ad-hoc reports for users. The integrity and timeliness of these reports were questioned by a number of interview subjects. Individuals can also create their own reports; however those interviewed indicated the current training available to them for BO did not provide them with the knowledge required to create customized ad-hoc reports. There was a general consensus amongst interview subjects that the integrity of reports generated by BO is questionable, either due to data integrity /data entry issues or user error related to query creation.
- The AMIS and web databases have different data architectures (i.e., the structure of tables and rules is different). As a result the batch jobs (i.e., data transfers) generate a lot of exception reports. This has been a result of changes to one database without a corresponding change to the other database. For example, changes are often made in the "web" database to accommodate new web forms without first changing the structure of the "corporate" AMIS database (refer to Change Management Process below for additional commentary). Those DBAs interviewed indicated the discrepancies between databases are currently being addressed.
- The testing of business requirement changes follows a clearly defined step-by-step process and includes unit, system, integration and user acceptance testing. Testing is conducted in two phases and in two separate IT environments, as follows:
  - Alpha Environment: This is a separate and restricted environment where ISD staff conducts unit, system, and integration testing; and,
  - Beta Environment: This is a separate and restricted environment where AMIS user community personnel conduct user acceptance testing.
- It is important to note that effective ISD processes for the testing of business requirement changes were observed. This is consistent with:
  - The clear consensus observed amongst SSHRC personnel that AMIS is a reliable system that experiences relatively few technical problems. Had ineffective change management practices existed, more comments from the user community regarding the system's lack of performance and reliability would have been expected; and,
  - The observations of the Audit of Information Technology conducted for SSHRC and NSERC and completed in January 2005. Specifically, this report states "Within ISD, each core application system development and maintenance activities follow a different SDLC and Project Management Framework. We also noticed that different change management and release management processes exist. Even if these methodologies and processes differ for each core application, our analysis led us to conclude that each one provides good controls to develop, manage and track changes, test changes, and roll out the applications."

3.4.3 Strengths

- There is a clear consensus in the user community and ISD staff that changes are required to increase the effectiveness of the current AMIS change management process.
- ISD has identified weaknesses in the business requirement capture, approval, and deployment process and is proposing a new process to address the identified weaknesses.
- ISD is standardizing the business requirement tracking tools used in the business requirement capture, approval, and deployment process. Specifically, in the winter of 2005 ISD harmonized the tools used to capture and to test business requirement changes. ISD now uses one tool, ClearQuest, to track both of these processes. Previously, ISD used Remedy to capture business change requests and ClearQuest to track and monitor the testing process.

3.4.4 Business Requirements Opportunities for Improvement

Overall, our business requirements-related findings indicate that the present business requirement change management process does not support the effective and timely capture, approval, and deployment of business requested changes for AMIS.

Observations	Impacts(s)	Recommendation(s)
Business Requirements Approval Authority There is currently a lack of a clearly defined process and authorities to capture, approve and prioritize AMIS-related business requirements.	This increases the risk that some business requirements will not be captured, that lower priority business requirements will be implemented in advance of higher priority requirements, or that requirements will be implemented that are not consistent with management's intentions.	We recommend that the URG be given authority delegated by the AMIS application owner (or ideally that URG be chaired by the AMIS owner), within risk-based prescribed limits, to prioritize and approve business requirements change requests based on a cost/benefit analysis. For example, this could mean that only requirements that are assessed as having a "high" impact on AMIS would require approval from the IM/IT Steering Committee. All other requirement change requests would be approved directly at URG. We recommend that the new AMIS governance structure discuss and approve a revised business requirements capture, approval and prioritization process.
Management Response		
Business Requirements List The current list of outstanding change requests for AMIS is not reflective of all of SSHRC's AMIS-related business requirements. For example, users go outside the current change request process and request changes directly from ISD staff, or use other systems (e.g. CIMS) to meet their business requirements.	This increases the risk that SSHRC will not be making AMIS planning and replacement decisions based on a comprehensive set of business requirements.	We recommend to the AMIS owner that a comprehensive exercise be conducted to gather all business requirements from the AMIS and ESD user community, including those that are currently fulfilled by other systems. These business requirements should be aligned with SSHRC's vision and strategic plan.
Management Response		

3.5 System's Maintenance

Effective communication between IT management and users regarding services required is enabled by a documented definition and agreement of IT services and service levels. This process also includes monitoring and timely reporting to stakeholders on the accomplishment of service levels. This process enables alignment between IT services and the related business requirements.

3.5.1 Expected Practices

The following are expected practices in the area of system's maintenance, as derived from Deloitte's General Computer Control methodology, as well as COBIT from ISACA:

- *Service Level Management Framework* - Define a framework that provides a formalized service level management process between the customer and service provider. The framework maintains continuous alignment with business requirements and priorities and facilitates common understanding between the customer and provider(s). The framework includes processes for creating service requirements, service definitions, service level agreements (SLAs), operating level agreements (OLAs) and funding sources. These attributes are organised in a service catalogue. The framework defines the organizational structure for service level management, covering the roles, tasks and responsibilities of internal and external service providers and customers. (COBIT)
- *Service Level Agreements*- Define and agree to service level agreements for all critical IT services based on customer requirements and IT capabilities. This covers customer commitments, service support requirements, quantitative and qualitative metrics for measuring the service signed off by the stakeholders, funding and commercial arrangements if applicable, and roles and responsibilities, including oversight of the SLA. Items to consider are availability, reliability, performance, capacity for growth, levels of support, continuity planning, security and demand constraints. (COBIT)
- *Monitoring and Reporting of Service Level Achievements* - Continuously monitor specified service level performance criteria. Reports are provided in a format meaningful to the stakeholders on achievement of service levels. The monitoring statistics are analysed and acted upon to identify negative and positive trends for individual services as well as for services overall. (COBIT)

3.5.2 Summary of Current Practices

- Senior official do not have a clear idea of how much it costs to support AMIS annually, but there is a perception that excessive resources are being devoted to the maintenance of the system.
- A Service Level Agreement (SLA) between ISD and the user community does not specifically exist for AMIS. AMIS is embedded in the ISD SLA with NSERC and SSHRC. The NSERC and SSHRC ISD SLA is reviewed and approved annually by ISD management. If any changes are made, the SLA is re-approved by NSERC and SSHRC management. The SLA was last approved by business line management approximately 18 months ago.
- ISD does not provide regular AMIS performance reporting to the AMIS user community or senior management of SSHRC. It should be noted, however, that ISD does provide senior management and Council with an annual performance report for the IT function as a whole and that some AMIS related expenditure reporting is included in this report. Additionally, it should be noted that without a clearly defined AMIS application owner from the user community it is unclear what business unit in SSHRC would have the responsibility and accountability to receive, review, and approve these reports.
- Conversely, ISD believes maintenance costs for AMIS to be relatively low. ISD has 5 FTE's and 2 consultants directly supporting AMIS upgrades and changes. Additionally, AMIS is supported by staff in Data Administration, Support Centre, and, Technical Services.

- Some statistical data is produced on a regular basis for data entry, as well as following each competition.

3.5.3 Strengths

- User perceptions of the reliability and availability of AMIS were consistently positive across most interviews conducted.

3.5.4 System's Maintenance Opportunities for Improvement

Overall, our system's maintenance-related findings indicate that, while AMIS' system maintenance processes have been effective at keeping AMIS reliable and available, the lack of an AMIS owner and of performance reporting on AMIS has not permitted an effective monitoring process.

Observations	Impacts(s)	Recommendation(s)
Performance Reporting ISD does not provide regular AMIS performance reporting to the AMIS user community or senior management of SSHRC, and no reporting requirement has been incorporated into the overall Service Level Agreement (SLA) between ISD and SSHRC/NSERC.	A lack of performance reporting does not allow the user community to effectively monitor compliance with the SLA and ensure an optimal use of resource.	We recommend that, once an AMIS owner has been clearly identified, performance reporting on AMIS be provided by ISD to the AMIS owner on a regular basis. The SLA should also be amended to clearly reflect performance reporting requirements. Reporting could include items such as: • Statistics on # of problems and change requests completed and outstanding (by order of priority); • Statistics on time to complete requests and related costs; • % of achievement of service levels; and, • Statistics on system uptime, etc.
Management Response		

3.6 Change and Problem Management

Effective problem management requires the identification and classification of problems, root cause analysis and resolution of problems. The problem management process should also include identification of recommendations for improvement, maintenance of problem records and review of the status of corrective actions. An effective problem management process improves service levels, reduces costs and improves customer convenience and satisfaction.

3.6.1 Expected Practice

The following are expected practices in the area of change and problem management, as derived from Deloitte's General Computer Control methodology, as well as COBIT from ISACA:.

- Management should implement a process to ensure that the performance of IT resources is continuously monitored and exceptions are reported in a timely and comprehensive manner. *(COBIT)*
- The performance management process should include forecasting capability to enable problems to be corrected before they affect system performance. Analysis should be conducted on system failures and irregularities pertaining to frequency, degree of impact and amount of damage. *(COBIT)*

- User support should be established within a help desk function. Individuals responsible for performing this function should closely interact with problem management personnel. *(COBIT)*
- IT management should define and implement a problem management system to ensure that all operational events that are not part of the standard operation (incidents, problems and errors) are recorded, analysed and resolved in a timely manner. Emergency programme change procedures should be promptly tested, documented, approved and reported. Incident reports should be established in the case of significant problems. *(COBIT)*
- The problem management system should provide for adequate audit trail facilities that allow tracking from incident to underlying cause (e.g., package release or urgent change implementation) and back. It should work closely with change management, availability management and configuration management. (*COBIT)*

3.6.2 Summary of Current Practices

- At the time of the conduct of this review, the ISD AMIS Project Manager was in the midst of introducing a new and more robust change management process to address many of the perceived weaknesses in the current business requirement capture, approval, and deployment process (see section 2.3.2).
- ISD has an established problem management process, as follows.
  - Technical problems are reported to the AMIS help desk by both ISD and the AMIS user community;
  - Once a problem report is received, the help desk logs the call and creates a problem ticket in ClearQuest. The help desk staff attempt to resolve the problem at this step of the process. If successful, the problem ticket is closed in ClearQuest by the help desk staff;
  - If an immediate resolution is not possible, the problem ticket is sent to the AMIS Development Team for investigation and resolution; and,
  - Problem Report fixes are tested by ISD Quality Assurance staff and approved by the AMIS Development Team Leader before being moved into production.
- Help desk personnel prioritize problem reports received, in the ClearQuest system, by assigning a level of severity to each problem report. A five point scale is used to determine severity.
- Documentation was not found to verify that ISD routinely reports significant issues and problems and associated recommended solutions and related costs to the AMIS user community or the ESD Steering Committee. It is important to note, however, that the ESD Steering Committee has not met in the last year and, as previously stated, an AMIS application owner has not been designated by SSHRC senior management.
- Documentation was also not found to indicate that a single system tracks all problem reports and tickets through the entire problem report lifecycle (e.g., from initial identification, to fix development, to testing, and finally to production).
- The following reference was taken from a Request for Proposal placed on the Merx Public Tenders website, on December 28, 2005, by SSHRC: "The Information Systems Directorate (ISD) operates with a legacy incident tracking system. This system is out of date and does not support the *[Information Technology Service Management Software Solution]* ITSMSS and *[IT Infrastructure Library]* ITIL best practices." This tender was for the acquisition and implementation of an Information Technology Service Management Software Solution.
- ISD operates a help desk in support of the AMIS user community. A clear consensus was observed amongst the AMIS users interviewed that the AMIS help desk provides timely and effective service.

3.6.3 Strengths

- Those interviewed were very satisfied with the level and quality of service received from the help desk for AMIS related inquiries.
- ISD is standardizing the tracking tools used in the problem tracking and reporting process. Specifically, in the winter of 2005 ISD harmonized the tools used to capture and to test problem reports and changes. ISD now uses one tool, ClearQuest, to track both of these processes.
- On December 28, 2005, SSHRC released a Request for Proposal for the purchase and implementation of an Information Technology Service Management Software Solution. It is the intent of ISD management to use this system to ensure that best practices are operationally enabled and supported through the use of IM/IT Service Management enabling functionalities.

3.6.4 Change and Problem Management Opportunities for Improvement

Overall, our change and problem management-related findings indicate that the current change management processes adequately support effective problem management for AMIS. While processes around business requirement change management are currently inadequate, the enhancements proposed by ISD to the change management processes have been designed to address the identified weaknesses.

Observations	Impacts(s)	Recommendation(s)
Proposed Change Management Process Enhancements It does not appear that the proposed enhancements by ISD to the change management processes (refer to Section 2.3.2) have been formally approved by Senior Management.	The lack of a formal approval could result in changes to the process that are not consistent with management's intentions. This risk is further increased by other governance-related changes that are concurrently being proposed at the Senior Management level that may impact AMIS and create a disconnect between the two sets of proposed changes.	We recommend that formal approval be obtained by ISD from the DG CASD and the reconstituted URG (*refer to Section 3.3*) for the proposed enhancements to the change and problem management processes.
Management Response		

4. Next Steps

This report has assessed the adequacy of the actions being taken to ensure the effectiveness of AMIS in meeting its operational needs. The lines of inquiry used as the basis for this review are from the five following areas:

1. Vision and Strategic Direction
2. Governance and Accountability
3. Business Requirements
4. System's Maintenance
5. Change and Problem Management

Based on the information gathered throughout the review process, it appears that the actions being taken to ensure the effectiveness of AMIS in meeting its operational needs are **not currently adequate**. The recommendations detailed in the previous sections provide clear indications of opportunities for improvement.

Of the various opportunities for improvement noted in section 3, we recommend that SSHRC first identifies an application owner for AMIS. As all of the other opportunities for improvement noted will significantly affect AMIS and consequently its owner, the owner should be significantly involved in the implementation of the various recommendations, and in shaping how AMIS can be a strong foundational element to SSHRC's strategic vision of becoming a "Knowledge Council". Failure to find a fully engaged application owner for AMIS significantly increases the risk that the implementation of the recommendations suggested herein will not be successful.

Appendix A – Lines of Inquiry

1. Vision and Strategic Direction

- Are the vision and strategic plan for AMIS aligned with SSHRC's overall goals and objectives?
- Does AMIS meet the Council's current diverse needs?
- Can AMIS expand to accommodate the Council's future needs?

2. Governance and Accountability

- Are there appropriate structures and processes in place for:
  - Giving strategic direction on AMIS?
  - Requiring accountability for performance (progress made and resources spent) in executing that direction?
- Are all users of the system adequately represented on AMIS' governing body?
- Has the governing body committed the human and financial resources needed for the operation and life-cycle maintenance of the system?
- Has the governing body established the organizational structures and processes required for the life-cycle management of the system, including functional authorities with responsibility for addressing their organizations' business needs and an application manager with overall responsibility for the life-cycle of the system?
- Do the functional authorities and application manager report periodically on the performance of the system and on progress against its life-cycle plan so that the governing body can monitor progress and be alerted to variations in the expected deliverables, benefits, and time and cost schedules?
- Does the governing body monitor the performance of the system and the progress of the maintenance work against the plan, reallocate resources as necessary, reprioritize the plan to coincide with changing conditions and organizational objectives, and determine the performance and functional requirements for baseline controls?

3. Business Requirements

- Does the system's life-cycle plan include the management of business requirements?
- Are there a structure and a process for identifying, validating, prioritizing, developing, testing, and implementing business requirements in AMIS?
- Are all users represented in the determination of the scope of the system and its priorities from an organizational or management standpoint, definition of changes in the system's functional and control requirements, and test and approval of the changes?

4. System's Maintenance

- Have the system's operator and the users/clients signed Service Level Agreements (SLA) that establish the minimum level of performance to be delivered by the system?
- Does the system's operator report periodically to the users/clients on the system's performance? Performance measures address computer resource utilization (too much or too little computing power), capacity planning (current versus project workload), system

availability (uptime/downtime), and problem resolution (timeliness, effectiveness, and efficiency).

- Do the users/clients use the performance information to promote the effective and efficient operations of the system?

5. Change and Problem Management

- Does the system's operator record all problems with the system and their level of severity; track problems until their resolution; identify systemic problems, which require systemic fixes; and report significant issues along with recommended solutions and related costs to the users/clients?
- Have the system's operator and the users/clients established a formal Help-Desk function that supports users in a timely manner, by logging all reported problems for tracking and management until their resolution, resolving minor ones, and forwarding difficult problems to appropriate information services resources for resolution?

Appendix B – Interviewees

- Michel Cavallin, DG CASD
- Janet Halliwell, Executive Vice-President
- Gordana Krcevinac, Senior Program Officer – Initiative of the New Economy (INE)
- Marc Fonda, Director - Strategic Programs and Joint Initiatives Programs
- Kalvin Mercer, Director ISD
- Nicole Michaud, Project Manager - Electronic Service Delivery, Program Branch
- Silviu Popescu, Application Design Analyst, ISD
- Allen Phillips, DBA, ISD
- Tom Chateauvert, Project Manager, AMIS, ISD
- Gérald Bouchard, QA lead - AMIS
- Hélène Regnier, Senior Policy & Planning Analyst
- Jean-François Brisson, Application Design Analyst
- Carole Ann Murphy, Director - Research and Dissemination Grants
- Adèle Savoie, Assistant Director - Fellowships and Institutional Grants
- Sylvie Roy-Hotte, Manager - Ops Services CASD
- Andrea Budgell, Acting Manager - Corporate Secretariat

Appendix C – Documentation Reviewed

- An Organizational Review of the Information Management and Information Technology Services in the Common Administrative Services Directorate (CASD) for NSERC and SSHRC, Michel Cavallin, October 3, 2005.
- Framework and Design for the Evaluation of SSHRC's Awards Management Information System (AMIS), June 2005, Draft for Discussion
- Riding the Wave: The Corporate Context for AMIS
- Service Level Agreement between Information Services Division, Common Administrative Services Division and NSERC and SSHRC, April 2004
- Audit of Information Technology Final Report addressed to NSERC and SSHRC, Progestic International Inc., January 27, 2005
- Audit of Information Technology Management (Action Plan) Responses
- AMIS User Manual, September 2005
- Proposed Re-Structuring and Coordination of the E-Commerce Functions within SSHRC, ESD Steering Committee, Summary of Intended Directions, November 12, 2004
- SSHRC, Audit of Electronic Services Delivery Project, Draft, December 18, 2001
- Business Case, SSHRC's Award Management Information System (AMIS), July 31, 1998
- ISD Service Structure and Resource Allocation (Fiscal 05/06)
- Data Transfer Issues, July 17, 2001
- AMIS-URG Meeting Minutes
- ESD Steering Committee Meeting Minutes
- AMIS Software Change Request Form, Draft 1.5
- AMIS Enhancement Reports
- AMIS Software Change Request Summary
- SSHRC Organization Charts
- AMIS Training 2005 Draft, October 24, 2005
- AMIS User Requirements Group (URG) Terms of Reference, Draft, February 4, 2003

Appendix D – Role & Responsibilities of an Application Owner

Management should ensure that all information assets (data and related systems) have an appointed owner. The business owner of a system is usually the owner of the primary business functions served by the application (i.e., the application's largest stakeholder). In the context of AMIS, an essential role of the business owner is to ensure AMIS supports the current operations and strategic vision of SSHRC, and is appropriately available, secure and sustainable.

Key responsibilities for the business owner as the application owner of AMIS include:

- Ensure AMIS' long and short-term requirements are considered in the formulation of information technology strategies and long-and short-term plans;
- Ensure performance standards are established for AMIS;
- Review system performance reports, ensure adequate action is taken upon identification of inefficient performance, and formulate and implement solutions;
- Develop the system's upgrade and enhancements plans to integrate the functionality mandated by business requirements and vendor upgrades into the production application. This includes developing system enhancement and testing procedures;
- Have final approval on enhancements to AMIS and ensure user acceptance testing is completed;
- Ensure adequate backup and recovery procedures are implemented, and the existence of a tested business continuity plan; and,
- Ensure the availability and quality of user training and related materials, reliability and the preparedness of help desk and other technical support processes and personnel.

The application owner should also be responsible for overseeing the management, control and review of application security and the maintenance and reviews of data security, reliability and integrity. To ensure the security of AMIS and its data the application owner should have the final decision about data classification and access rights. This includes determining who should have access, and what access privileges are granted. When determining a user's access privileges, the application owner should ensure that segregation of duties is maintained, and that job requirements are fulfilled. The application owners should ordinarily receive lists of users granted access to their information, on a regular basis. Reviews should ordinarily occur on a continuous basis, to ensure that controls and rules are consistently applied, and to provide a secure environment on a day-to-day basis.

An application owner typically delegates day-to-day custodianship to a systems administrator and delegates security responsibilities to a security administrator. The application owner, however, remains accountable.

In the role of ensuring AMIS is meeting the programs' and the Council's requirements, the application owner should be involved in all decisions involving the replacement of AMIS and the development of a new system. In the development of a new system the application owner is accountable to ensure:

- the design meets the system requirements;
- adequate controls, audit trails, security, backup, recovery and restart procedures are included in the design;
- the design and development of the system meet all appropriate business standards; and,
- all required user and system documentation for the system is complete and accurate.

The application owner is accountable for formally accepting the new system as complete and ready for production. Although accountability remains with the application owner, responsibility for many of the above requirements may be delegated to information technology personnel within CASD.