

Systems under Development Audit of the Shared Services Canada Transformation Programs

Annual Report 2016–2017

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Executive Summary

What we examined

As part of its efforts to modernize how the federal government manages its information technology infrastructure, Shared Services Canada (SSC) has initiated a comprehensive Government of Canada-wide business transformation that hinged on five core transformation programs.

All five of these transformation programs entail greater complexity and magnitude than typical “systems under development (SUD)”, and as such, they were identified and recommended to be reviewed as a SUD audit by SSC’s Departmental Audit Committee.

To this end, the Office of Audit and Evaluation began conducting quarterly SUD audit programs of SSC’s transformation programs in 2016. The first four quarterly SUD audit programs are summarized in this report. Each of these four audit programs had its own unique focus:

- Transformation planning;
- Performance reporting and financial management;
- Government of Canada Wide Area Network project; and
- Workload migrations.

Why it is important

The success of SSC’s Government of Canada-wide business transformation hinges on the success of the five transformation programs that are the subject of the SUD audit. As such, the SUD audit provides a vital contribution to the success of the transformation agenda by helping management to assess whether the transformation programs are on track and by identifying issues in a timely manner.

What we found

Generally speaking, we found that SSC was making progress on its transformation agenda and delivering results, but was often doing so on the strength of workmanship and effort rather than consistent, repeatable processes and mature governance structures.

There were areas where appropriate processes had not been documented or approved. For example, in the transformation planning portion of the audit, we found that many of the activities expected to be associated with the effective management of the Transformation Plan were taking place, but that formalized and approved processes and documents were often lacking.

There were also instances in which information related to the performance and implementation of the transformation projects was found to be lacking. For example, in the performance measurement portion of the audit, we found that performance measure targets had been established but that evidence was not provided to support the targets, or did not fully support the progress made against those targets. Furthermore, evidence provided to support transformation project budget items did not fully support the amounts included in the forecasted budgets.

Subsequent to the completion of the 2016-17 audit programs, SSC created and implemented a Project Management and Delivery Branch responsible for centralized project management processes, sound project governance and effective project management oversight. The effectiveness of these revised, centralized project management processes will be assessed as part of future SUD audit programs.

Patrice Prud'homme
Acting Chief Audit and Evaluation Executive

Background

1. Shared Services Canada (SSC) was established on August 4, 2011, to modernize how the federal government manages its information technology (IT) infrastructure in order to better support the delivery of programs and services to Canadians. SSC is delivering mandated email, data centre and network services to partner organizations in a consolidated and standardized manner to support the delivery of Government of Canada programs and services. With a whole of government approach to IT infrastructure services, SSC is creating economies of scale to deliver more efficient, reliable and secure IT infrastructure services to Government of Canada departments. SSC also provides certain optional technology-related services to government organizations on a cost-recovery basis.
2. Immediately following its creation, SSC began to plan the consolidation of the Government of Canada's email, data centre and network services. A Transformation Plan (TP) was developed based on analysis of the Government of Canada's current and future requirements, consultation with partner organizations, and private sector benchmarks. In 2013, SSC was given the additional responsibility to consolidate the procurement of workplace technology devices (WTD) hardware and software.
3. Effectively, SSC initiated a comprehensive Government of Canada-wide business transformation that hinges on the five core SSC transformation programs that form the Transformation Agenda, being:
 - Data Centre Consolidation (DCC);
 - Email Transformation Initiative (ETI);
 - WTD;
 - Cyber and IT Security (CITS); and
 - Telecommunications Transformation Program (TTP).
4. These five major transformation programs are recognized as being highly complex, significant in cost and critical to the success of the Government of Canada's overall modernization agenda. Each of the transformation programs encompass numerous projects, with continued evolution and rapid development to achieve stated targets, with particular focus on Government of Canada-wide annual savings and improved efficiency.
5. All five of these transformation programs entail greater complexity and magnitude than typical "systems under development (SUD)". As such, each of the five major transformation programs were identified and recommended to be reviewed as a SUD audit by SSC's Departmental Audit Committee.

Objective

6. The SUD audit objectives are to provide management with an assessment of:
 - The progress and attainment of each program's objectives at defined milestones within the program and across the transformation agenda; and
 - Key internal controls, governance processes and transformation risk management framework at a point in the development cycle where enhancements can be implemented and processes adapted.

Scope

7. The scope was limited to processes and controls within SSC's transformation program mandate for the ETI, WTD, TTP, DCC and CITS.
8. Each quarterly, SUD audit program has its own unique focus. The first four quarterly audit programs, which are summarized in this report, focused on:
 - Transformation planning;
 - Performance reporting and financial management;
 - Government of Canada Wide Area Network (GCNet WAN) project; and
 - Workload migrations.

Methodology

9. The SUD audit approach incorporates the following key characteristics:
 - Top-down, risk-based approach with an integrated perspective across transformation programs that accounts for program interdependencies.
 - Continued planning, execution, reporting and planning refinement for each periodic (i.e. quarterly) cycle to enforce continued alignment between SUD audit resource allocation and risks/priorities to SSC.
10. The SUD audit assesses (qualitatively and quantitatively) whether the programs are on track, identifying key issues in a timely manner.
11. During the cyclical execution phases of the audits, we:
 - Interviewed SSC senior managers, managers and personnel.
 - Reviewed relevant documents, such as previous audits, government guides and policies with regard to project management, and SSC project management process documentation.
 - Performed data analysis.
12. The first four SUD audit programs are summarized in this annual report.

Statement of Conformance

13. This audit conforms with the Internal Auditing Standards for the Government of Canada, as supported by the results of the quality assurance and improvement program.
14. Sufficient and appropriate procedures were performed and evidence gathered to support the accuracy of the audit conclusion. The audit findings and conclusion were based on a comparison of the conditions that existed as of the date of the audit, against established criteria that were agreed upon with management.
15. The findings and conclusion are only applicable to the entity examined and for the scope and time period covered by the audit.

Summary of Findings

Transformation Planning

16. The first quarterly audit program, which was conducted from January 2016 to March 2016, was intended to assess the existence and design effectiveness of key controls in place to develop and implement an effective 2016 TP and, where applicable, assess the operating effectiveness of certain key controls. The scope of this audit included financial management, human resources (HR) strategy, key performance indicators (KPI), performance reporting, risk management, interdependencies, change management and governance.
17. At a high level, we found that many of the activities expected to be associated with the effective management of the TP were taking place, but that formalized and approved processes and documents were often lacking. For example:
 - The activities, schedules and resources needed to achieve SSC's 2016 TP objectives had been integrated into the TP 2016 budget, but the budgets had not been approved and finalized.
 - Current and future HR capacity needs at the transformation program level had not been challenged, approved and finalized. In addition, processes to re-allocate resources had not been established.
 - KPIs for the TP had not been established. Performance reporting for the transformation projects was inconsistent as there were no criteria in place for reporting whether or not projects were meeting performance targets.
 - A stakeholder communication plan had been developed. However, certain aspects, such as stakeholder impact assessments and risk assessments, had not been documented.
 - An effective governance structure had been established in compliance with SSC's Project Governance Framework.
18. In response to our findings, management committed to develop a medium to long term departmental HR plan and to improve talent management and succession planning. The Department is developing a benefits realization framework that includes a methodology for identifying and collecting information in support of KPIs. Furthermore, key interdependencies between transformation projects are now being mapped.

Performance Reporting and Financial Management

19. The second quarterly audit program, which was conducted from April 2016 to June 2016, was aimed at assessing the accuracy of the performance-related information reported on the five transformation programs and to assess the financial budgets for the five transformation programs to determine whether they were consistently developed and supported.
20. We found that the ETI had processes in place to support the development, review and approval of performance measures and related targets. For the other four transformation programs, however, evidence was not provided to support the performance measure targets, or did not fully support the progress against those targets. For these transformation programs, evidence was also lacking to support the accuracy of the performance measure progress reported.

21. For all five transformation programs, the monthly status updates included inconsistent performance measure targets. These updates were not presented to SSC's Service Project and Procurement Review Board within the scope of the audit.
22. The audit also tested the accuracy of transformation project budgets. We found that all expenses were appropriately classified as discretionary or non-discretionary. For projects across all five transformation programs, however, the supporting documentation that was provided to support budget items did not fully agree with the amounts in the budgets. Without supported and accurate budgeting, the risk of unexpected overages or lapses in funding increases.
23. Following the audit, management committed to a number of improvements to help address the deficiencies identified. This included the refinement and modification of performance measures and targets, and the documenting of processes and controls aimed at ensuring improving the accuracy of reporting. Management also committed to including Transformation Monthly Updates into the monthly departmental Operational Performance Review to ensure that the information is communicated to senior management in a timely manner.

Telecommunications Transformation Program: Government of Canada Wide Area Network

24. The third quarterly audit program took place from July 2016 to September 2016. The objective was to evaluate the process used to identify, assess and approve business requirements for the GCNet WAN project and to determine if oversight and vendor management controls were in place and operating effectively to manage and monitor the project.
25. We found that a process was in place to identify and assess requirements in consultation with vendors, contractors and partners and that the project was achieving its objective of updating Government of Canada networks. It was noted that there were no approvals provided for partner business requirements by partners or SSC. Although business requirements were prioritized as high, medium or low the rationale for this prioritization was not documented.
26. The audit examined the vendor contracts and determined that they contained all of the information and provisions (e.g. security requirements) necessary to meet the approved requirements. Contracting practices were generally completed in accordance with industry standards, and controls were in place to effectively manage the security requirements.
27. Oversight mechanisms were found to be in place but vendor reporting requirements as outlined in the contract were not consistently adhered to, as mandatory documentation (i.e. meeting minutes and status reports) was not being submitted to SSC. Furthermore, the GCNet WAN project master schedule had not been updated to reflect delays due to changes in scope and contracting.
28. To adapt to the observations of this audit, management has agreed to work more closely with the contract authority to ensure that any and all potential contractual impacts to a project decision are identified, assessed and addressed prior to any action being taken.

Data Centre Consolidation: Workload Migrations

29. The fourth quarterly audit program occurred from October 2016 to December 2016. It was intended to determine whether processes and controls were designed and operating effectively for workload migrations. To the extent possible, the audit tested controls and processes for recent partner migrations for Canadian Heritage and Natural Resources Canada (NRC).
30. The migration for NRC was successfully completed and, at the time of our audit, the migration for Heritage Canada was well underway. Despite the overall success of the projects, we found that migration project plans, timelines, roles, responsibilities and project specific terminology were not documented, approved and communicated within SSC, to the partners and relevant vendor organizations.
31. Evidence exists for both NRC and Heritage Canada that migration related information is being produced, monitored and reported, including information regarding the project status, schedule, budget and scope. However, some key workload migration activities were not finalized. Evidence related to partner application interdependencies, capacity, bandwidth and testing success metrics were not finalized, documented or approved. Backups and failover plans did not exist.
32. SSC follows a process to identify lessons learned at the completion of project (as per the Project Management Governance Framework) and the partners are involved. However, no formal lessons learned process took place following the NRC migration. Management expects that this problem will be addressed by the implementation of the next version (3.2) of the Project Management Governance Framework.
33. An established IT change management process within SSC exists. However, evidence was not provided to support that changes for workload migration projects were tracked through the change system and approved by the Change Advisory Board.
34. In response to this audit, management resolved to develop Workload Migration artefacts which will facilitate common understanding within SSC and with partner departments, regarding migration scope, approach, terminology, as well as roles and responsibilities. Workload migration documentation will focus on full and partial enclave migrations to end-state data centres.

Conclusion

35. The SUD audit objectives are to provide management with an assessment of:
- The progress and attainment of each program’s objectives at defined milestones within the program and across the transformation agenda; and
 - Key internal controls, governance processes and transformation risk management framework at a point in the development cycle where enhancements can be implemented and processes adapted.
36. In the first annual cycle of the SUD audit, we supported these audit objectives by executing four quarterly audit programs focussed on transformation planning, performance reporting and financial management, the GCNet WAN project, and workload migrations.
37. We found SSC was delivering results, but was often doing so on the strength of workmanship and effort rather than consistent, repeatable processes and mature governance structures. As such, we found that the Department was generally successful when measured against our first audit objective (i.e. the attainment of project objectives), but had room for improvement as it relates to our second audit objective (i.e. key internal controls, governance and transformation risk management).
38. Since the completion of these audit programs, management has produced MAPs to address the risks that were identified. The OAE is monitoring the implementation of these action plans. The Department continues to work on implementing the MAPs, to mitigate the risks identified by the SUD audit.
39. Updates have also been made to the transformation program control environment since the completion of the 2016-17 audit programs; notably, SSC has created and implemented a Project Management and Delivery Branch, responsible for the project management life cycle, from planning to delivery, of all projects at SSC, including transformation projects. The new Project Management and Delivery Branch has been made responsible for providing centralized and standardized project management processes, standards and tools for sound governance and oversight. The effectiveness of these revised, centralized project management processes and updates to the control environment will be assessed as part of future SUD audit programs.

Management Response

The following response from SSC management provides additional context and progress subsequent to the completion of the quarterly audit programs. The OAE will continue to validate these results as part of its ongoing follow-up process on management action plans, as well as in future audit and evaluation engagements.

SSC's management team accepts the findings of the first four SUD audit programs and, as noted below, has taken many steps to respond to the recommendations.

Transformation Planning

SSC has instituted a number of improvements since the completion of the audit of transformation planning in March 2016. Transformation program budgets were approved and allocated to branches by April 1, 2016. A long-term human resources strategy was developed and included in the draft Government of Canada Information Technology Infrastructure Plan (GC ITIP). The implementation of the strategy is supported by a mentoring program, a talent management and succession planning process, and branch learning needs analyses, which will be used to prioritize and address organizational training requirements.

In September 2016, SSC established a Performance Measurement and Evaluation Committee (PMEC), chaired by the President of SSC, to oversee improvements in performance and reporting. Key performance indicators have been developed for all transformation programs and will continue to be monitored and reported on regularly.

SSC implemented a comprehensive communications plan to revise the GC ITIP, which it shared in fall 2016 with stakeholders and the external review commissioned by the Treasury Board of Canada Secretariat. As a result of this consultation, SSC received 2,500 wide-ranging comments on the draft GC ITIP from employees, industry and Canadians.

Performance Reporting and Financial Management

Transformation program outcomes and performance indicators may evolve as a result of the recent consultations on the draft GC ITIP. To align performance targets with program outcomes and to improve accuracy in reporting, SSC has developed a benefits realization framework and a benefits management program, which is supported by the department's Business Analytics Council and overseen by PMEC.

SSC senior management will continue to monitor progress against transformation program indicators every month as part of its examination of the Department's Operational Performance Review. To ensure transparent reporting to Parliament and the public, SSC's Departmental Plans and Departmental Performance Reports will include comprehensive sets of performance indicators.

Telecommunications Transformation Program: Government of Canada Wide Area Network

SSC is closely monitoring the performance of the GCNet WAN service providers to ensure all contracted requirements are met and any deviations are noted early. Service credits will be applied, as prescribed in the contract, if deliverables are not met. The project master schedule and sub-project plans have been updated to reflect the current status of the project.

Data Centre Consolidation: Workload Migrations

The fourth SUD audit noted the overall success of two recent workload migrations, but recommended improvements to certain project management processes and artefacts. SSC has recently taken several steps to improve project management through more rigorous and

transparent governance, the development of a project management operating guide and the consolidation of all project managers in a new branch with an experienced Senior Assistant Deputy Minister. Based on lessons learned from previous projects and other organizations, SSC has developed a new workload migration strategy to move its customer departments' applications and data from old data centres to the new enterprise facilities efficiently and securely.

Conclusion

SSC continues to pursue improvements in operating and management practices as a result of SUD audit findings and associated recommendations, which will continue to generate benefits for the Government of Canada and Canadians. SSC is already seeing positive outcomes from these and other changes as, thanks to the hard work and expertise of SSC staff, the results of the customer satisfaction survey have increased from 2.79 in December 2015 to 3.43 in October 2017 on a five-point scale.

Annex A – Recommendations and Management Responses

Transformation Planning	
Recommendations:	
1.1	We recommend that the Senior Assistant Deputy Minister (SADM), Corporate Services (CS), supported by the Assistant Deputy Minister (ADM), Cyber and Information Technology Security (CITS), the ADM, Network and End Users (NEUB), and the ADM, Data Centre Services (DCS), continue progressing towards the final approval of the financial budget for the transformation programs.
1.2	We recommend that the SADM CS challenge, approve and finalize the current and future capacity needs at the transformation program level. A process to re-allocate resources should be developed and formalized to help maximize current resource capacity.
1.3	We recommend that the SADM CS establish processes to: <ul style="list-style-type: none">• Manage organizational knowledge transfer activities; and• Identify and manage continued capacity in areas of skill shortages.
1.4	We recommend that the SADM, Strategy, supported by the ADM CITS, ADM NEUB and ADM DCS develop and approve key performance indicators for the 2016 Transformation Plan (TP).
1.5	We recommend that the SADM, Strategy, define criteria for classifying progress made towards achieving performance measure targets (i.e. green = 5% within target, yellow = 10% within target, and red => 10% of target).
1.6	We recommend that the SADM, Strategy: <ul style="list-style-type: none">• Clarify responsibilities to identify, manage and oversee programmatic and project-level interdependencies based on scope, timelines, resource requirements and budgets for each transformation program;• Key interdependencies between transformation programs should be documented and mapped; and• The mapping of interdependencies should be approved by the ADM of the relevant branches referred to, updated on an ongoing basis, and monitored and reported to appropriate governance committees with overall responsibility for the 2016 TP.
1.7	We recommend that the Director General, Communications and Organizational Effectiveness: <ul style="list-style-type: none">• Conduct stakeholder impact assessments and update the Communications Plan based on the results;• Identify risks associated with stakeholder engagement and communication to inform the integrated risk assessment; and• Develop specific, measurable and timely performance measures to help ensure the communications plan has clear targets and progress is being monitored.
Management Response:	
Management agrees with these recommendations and has developed action plans to address the risks identified by the audit. In these action plans, management committed to approve the transformation program budgets. It also committed to develop: HR plans to manage organizational capacity and knowledge transfers; a benefits realization framework to ensure that performance reporting is linked to business outcomes; and to map the interdependencies between the transformation programs.	

Performance Reporting and Financial Management

Recommendations:

- 2.1 We recommend that the Assistant Deputy Minister (ADM), Data Centre Services (DCS), the ADM, Cyber and Information Technology Security (CITS), and the ADM, Network and End Users (NEUB), ensure that:
- The performance measure targets developed are supported through relevant, reliable information; and
 - The assumptions used to develop performance targets are documented.
- 2.2 We recommend that the ADM DCS, the ADM CITS and the ADM NEUB:
- Implement control measures to ensure that information reported is backed-up by documented supporting evidence; and
 - Validate that information reported by the Strategy branch to senior management is accurately presented.
- 2.3 We recommend that the Senior Assistant Deputy Minister (SADM), Strategy, ensure that the transformation programs updates are reported monthly to senior management.
- 2.4 We recommend that the SADM, Corporate Services, supported by the ADM DCS, the ADM CITS, and the ADM NEUB, ensure that in accordance with the Policy on Financial Resource Management, Information and Reporting:
- The transformation project budgets are supported by reliable information; and
 - A rationale for any assumptions is documented.

Management Response:

Management agrees with these recommendations and has developed action plans to address the risks identified by the audit. These action plans included commitments to refine the processes and targets related performance reporting in order to ensure that targets are appropriate and reporting against those targets is accurate. Management also resolved to leverage the Financial Management Guide for Project Managers to ensure that project budgets are supported by reliable information.

Telecommunications Transformation Program – Government of Canada Wide Area Network

Recommendations:

- 3.1 We recommend that the Assistant Deputy Minister (ADM), Network and End Users (NEUB):
- Ensure that exceptions to contracted requirements be approved by the President and the Chief Operating Officer; and
 - Complete post-migration control assessments, and document the results for the sites that have been migrated.
- 3.2 We recommend that the ADM NEUB apply penalties as prescribed in the contract (i.e. Service Credits) for non-conformance with contract deliverables.
- 3.3 We recommend that the ADM NEUB ensure that the Government of Canada Wide Area Network project master schedule is updated to reflect the overall status of the project.

Management Response:

Management agrees with the recommendations. In response to this audit, management committed to improving contract governance by ensuring that contract amendments (when required) are approved prior to execution of the project and that post migration control assessments are completed and documented for the sites that have been migrated. When applicable, penalties may be applied to ensure conformance with the contract.

Workload Migrations

Recommendations:

- 4.1 We recommend that the Assistant Deputy Minister (ADM), Data Centre Services (DCS), develop, approve and communicate a workload migration planning kit, which could include:
- Workload migration project specific phases, terminology, tasks, timelines and applicable milestones;
 - Roles and responsibilities, for Shared Services Canada and the partner, including accountability for final go or no go decision; and
 - Account Executives and Service Delivery Management teams as liaison for the project.
- 4.2a We recommend that the ADM DCS ensure that for existing and future workload migration projects:
- A complete, approved list of applications, identifying mission critical applications and interdependencies, be obtained from the partners;
 - Current bandwidth and capacity requirements be documented;
 - Pre- and post-workload migration data backup plans and tests, as well as, handover responsibilities, be documented and signed off by SSC and the partners when appropriate;
 - Success metrics to measure effectiveness of workload migration be documented and tested; and
 - Develop and test a failover plan.
- 4.2b We recommend that the Senior Assistant Deputy Minister (SADM), Strategy, ensure that the Account Executive teams discuss and document future bandwidth and capacity requirements with their assigned partners.
- 4.3 We recommend that the SADM, Project Management and Delivery (PMD), ensure that existing and future workload migration projects abide by established Project Governance Framework requirements (artefacts and approvals), including identification, documentation and communication of lessons learned during project close out.
- 4.4a We recommend that the SADM, Service Delivery and Management (SDM), assign/identify the change coordinators for joint partner Change Advisory Boards and ensure roles and responsibilities are executed.
- 4.4b We recommend that the SADM SDM work with the SADM PMD to develop and communicate a standardized change management process for enclave migrations to ensure that:
- All required service design and delivery teams are engaged in the enclave migration projects; and
 - All submitted change tickets are tracked and an audit trail is available to link change requests to projects.

Management Response:

Management accepts the findings and recommendations of the audit. To address these recommendations, management committed to developing workload migration documentation that will clarify roles and responsibilities and facilitate common understandings regarding program scope, approach, terminology and key deliverables. Management also noted that the implementation of a new project management governance framework would address the application of project management processes, including those identified by the audit recommendations.

Annex B – Quarterly Objectives

The following were the objectives of the four quarterly audits:

1. To assess the existence and design effectiveness of key controls in place at SSC to develop and implement an effective 2016 TP, and where applicable and appropriate, assess the operating effectiveness of certain key 2016 TP controls.
2. To assess the accuracy of the performance related information reported on the five transformation programs; and assess the financial budgets for the five transformation programs to evaluate that they are consistently developed and supported.
3. To evaluate the process to identify, assess and approve business requirements for the GCNet WAN project; and determine if oversight and vendor management controls are in place and operating effectively to manage and monitor the GCNet WAN project.
4. To determine whether processes and controls are designed and operating effectively for DCC workload migrations.

Annex C – Acronyms

Acronym	Name in Full
ADM	Assistant Deputy Minister
CITS	Cyber and Information Technology Security
CS	Corporate Services
DCC	Data Centres Services
DCS	Data Centre Services
ETI	Email Transformation Initiative
GC ITIP	Government of Canada Information Technology Infrastructure Plan
GCNet WAN	Government of Canada Wide Area Network
IT	Information technology
HR	Human resources
KPI	Key performance indicators
MAP	Management action plan
NEUB	Network and End users Branch
NRC	Natural Resources Canada
OAE	Office of Audit and Evaluation
PMD	Project Management and Delivery
SADM	Senior Assistant Deputy Minister
SDM	Service Delivery and Management
SSC	Shared Services Canada
SUD	System under development
TP	Transformation Plan
TTP	Telecommunications Transformation Program
WTD	Workplace technology devices