Office of the Provincial Auditor
500 - 330 Portage Avenue
Winnipeg, Manitoba R3C 0C4

February 2002

The Honourable Peter M. Liba
Lieutenant Governor of Manitoba
Room 235, Legislative Building
Winnipeg, Manitoba
R3C 0V8

Dear Sir:

I have the honour to submit herewith our February 2002 report on Value-for-Money Audits to be laid before Members of the Legislative Assembly in accordance with the provisions of Section 13 of The Provincial Auditor's Act.

Respectfully submitted,

Jon W. Singleton, CA•CISA
PROVINCIAL AUDITOR

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REFLECTIONS OF THE PROVINCIAL AUDITOR

This report contains a chapter on an audit of information technology (IT) at Keewatin Community College (the College) and a follow-up of audits performed in 1997 with respect to the Maintenance Enforcement Program and the Child Day Care Program.

As with most organizations, the implementation of effective IT is playing an increasingly significant role at the College. IT supports the efficient and effective administration of the College. It also supports and enhances the learning experience of students. The College's northern location and its large catchment area, make the effective use of IT essential, particularly regarding distance education.

Given the significant fiscal constraints facing the College, an effective process in place to budget IT expenditures in relation to other priorities is a must.

We found that the College could do a better job of managing its IT activities. A primary need is for the development of a multi-year IT strategic plan. While it costs time and money to develop such a plan, I believe that in the long run, the benefits of developing and implementing such a plan outweigh the costs. The process of developing the plan will help the College make some of the difficult choices necessary to ensure maximum benefit from limited resources. In the absence of a well planned approach to IT, the College is exposed to undue risk of dysfunctional systems that could affect both operations and the quality of services provided to students.

In addition, there is a significant need for more defined and documented processes for supporting the technological infrastructure, for managing change requests and the help desk and for ensuring the security of its information and its systems. These are important areas in which we believe the College would benefit by building more rigor and accountability into its existing processes.

I am encouraged by the College's commitment to address these important needs.

With respect to the follow-up chapter, I am encouraged by the progress shown by the Department of Family Services and Housing which is well on its way to implementing all of our recommendations. This progress is particularly noteworthy in a time when demands on public servants are high and resources are significantly constrained. No doubt these factors have contributed to the difficulties the Department of Justice has encountered in addressing our recommendations. While progress is being made, I encourage the timely completion of the IT project that will address several of our recommendations.

Jon W. Singleton, CA•CISA

KEEWATIN COMMUNITY COLLEGE

Investment in Information Technology

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Report Summary

ABOUT THE COLLEGE

Keewatin Community College operates under the authority of The Colleges and Consequential Amendments Act and is a self-governing institution with a government appointed Board of Directors.

The College serves northern Manitoba and has a geographical intake area of almost 80% of the total area of Manitoba. The population within this geographical area is approximately 79,000 people.

The College offers over thirty diploma and certificate programs in the areas of applied science, technology, business, health, trades, and vocational fields. Campuses are located in The Pas and Thompson, with regional centres located in Cross Lake, Churchill, Flin Flon and Swan River. Approximately 200 academic and administrative staff provide education services to 1,200 full and part time students. In addition, the College provides training to approximately 900 participants in contract training programs. The expenditure budget for 2000/2001 was $17.7 million. Revenues included Provincial grants of $12.1 million.

REASON FOR THE AUDIT

All organizations that rely in whole or in part on public funding need to maximize the value obtained from every dollar spent. Expenditures on information technology (IT) are no exception. We chose to conduct a value-for-money audit on the Keewatin Community College's investment in information technology because it represents a significant annual investment and has a significant impact on College operations.

AUDIT PURPOSE, SCOPE AND APPROACH

The purpose of our audit was to answer the following four questions:

1. Is the College making sufficient progress in achieving its information technology objectives?
2. Are information technology systems and services adequately meeting the needs of users?
3. Are information technology purchases economic and effective?
4. Is the College taking appropriate action to minimize the risk of unauthorized access to its computer networks?

Our examination was performed in accordance with value-for-money auditing standards recommended by the Canadian Institute of Chartered Accountants, and accordingly included such tests and other procedures as we considered necessary in the circumstances. Audit procedures were performed during the period of September 2000 through January 2001.

IMPORTANT CONSIDERATIONS

Our research indicates that the demands on information technology departments at colleges and universities across Canada may be overwhelming. This situation results from several factors including the following:

- The transition from a mainframe based computing environment to the rapidly changing microcomputer based environment has increased the nature and demand for services needed by users.
- Today, almost all faculty, administrative staff and students are users of information technology resources and services. Previously, only fractions of these groups were users.
- Colleges and universities face challenges in staffing information technology positions. These challenges include fewer graduates in computer-related fields, lack of competitive salaries in the higher education environment, and increasing market demand for information technology skills.

We believe these factors have also had an impact on Keewatin Community College. Other factors that challenged the College include:

- changes since 1999 in senior management personnel, including the President, the Director of Finance and Administration, and the Director of Information Services;
- the IT Department's focus in the last two years on implementing a new administrative and student information system; and
- the northern location of the College which makes it more difficult to fill vacant positions with qualified and experienced IT staff.

CONCLUSIONS AND KEY FINDINGS

1. IS THE COLLEGE MAKING SUFFICIENT PROGRESS IN ACHIEVING ITS INFORMATION TECHNOLOGY OBJECTIVES?

Although IT objectives were not articulated in a multi-year IT strategic plan, two specific IT objectives were included in the College's Operational Plan 2000. We concluded that significant progress had been made in accomplishing many of the tasks associated with the two IT objectives.

Our findings are discussed in brief below.

The Need for a Multi-Year IT Strategic Plan

While the College's Operational Plan 2000 included two specific IT objectives, the College had not developed a multi-year IT strategic plan. Such a plan would set out how the College should increase its use of technology to further its business objectives and would include a multi-year acquisition plan to update hardware and software.

Because of Resource Constraints, Certain Key Tasks Had Not Been Completed

The College's Operational Plan 2000 set out two IT related objectives with 12 specific tasks to be completed during its 2000/01 fiscal year. While the IT Department had requested sufficient funding in its 2000/01 budget request to complete the 12 tasks, the College, as a whole, did not have access to sufficient resources to fund all requests from its operating divisions. The IT Department was not allocated its full request and as a result was not able to complete certain tasks including:

- increasing the communication link between The Pas and Thompson to a T1 standard;
- acquiring new servers; and
- upgrading of staff computers to at least the College's minimum standard.

Not completing these tasks impacted the effective and efficient operation of the IT infrastructure and certain staff.

2. ARE INFORMATION TECHNOLOGY SYSTEMS AND SERVICES ADEQUATELY MEETING THE NEEDS OF USERS?

We concluded that while College staff believe that systems and services have improved over the last two years, additional system and service enhancements are required to ensure that:

- **staff are satisfied with the nature and quality of information available;**
- **staff and students can rely on the technology;**
- **the help-desk function is as effective as it should be; and**
- **staff and students have access to the IT training they require.**

Our key findings are discussed in brief below.

The Need to Ensure Users are Satisfied with the Nature and Quality of Information and Reports

In our view, one of the best measures for determining the adequacy of information and reports generated by an information system is the level of satisfaction users have with the information. As such, we conducted a staff user satisfaction survey. Survey responses indicated that the College should continue pursuing improvements to the information generated by its information systems. As an example, information and reports generated by the accounts receivable system were cited by staff as being inaccurate.

The Need to Define and Monitor Expected Service Levels

We found that the College had not developed expected service levels for IT support services. As a consequence, the College was unable to objectively assess the adequacy of the levels of service achieved by the IT Department. Our survey indicated that there was a need to either improve service levels achieved or to better communicate reasonable service level expectations to staff. Understanding service levels achieved would help the College determine the adequacy of both its technological capacity and the level of human resources devoted to the IT Department.

Other findings included in the detailed report deal with the need to:

- better manage requests for changes to systems;
- develop and document standards and procedures for supporting the technological infrastructure; and
- maintain complete asset management records.

The Need to Better Manage the Help Desk

While the IT Department provides a help desk service, we noted that:

- help requests were not logged or otherwise recorded;
- guidelines had not been established for determining the severity of problems and the most appropriate staff person to refer them to; and
- performance measures had not been established.

The Need for Appropriate Staff Training Opportunities

Almost half of the respondents to our survey indicated that they were not satisfied with the content, availability, and timeliness of training opportunities. In addition, approximately a third of respondents indicated that they were not satisfied with the availability and usefulness of user manuals, instructions, and on-line help.

3. ARE INFORMATION TECHNOLOGY PURCHASES ECONOMIC AND EFFECTIVE?

We concluded that the College's purchasing policies would foster economic and effective acquisitions, and that recent purchases have contributed to increased standardization. However, we identified certain IT purchases where the College did not comply with key aspects of the approved purchasing policies. In particular, we are concerned that a significant IT purchase was made without due regard for demonstrating that value for money was obtained.

Our key findings are discussed in brief below.

Other findings included in the detailed report deal with the need:

- for greater standardization of networking and peripheral equipment, and
- to ensure IT related purchases are appropriately approved.

The Need for Greater Standardization of Desk Top Equipment

Recent desktop computer purchases were made with "standardization" in mind. The specifications for these purchases exceeded the College's minimum standard for staff desktop computers and contributed toward greater standardization within the existing infrastructure. Nevertheless, we noted that, overall, computers used at the College were from a variety of manufacturers and represented a wide variety of generations of computer hardware. While the College had made significant progress, we believe greater standardization would be desirable. The College's composition of desktop computers increased the complexity of providing support services, and likely impacted the efficiency of the IT Department.

A Significant Purchase was not Tendered

College policy requires that all purchases for amounts over $10,000 be subject to a competitive tendering process, and that all purchases greater than $50,000 be approved by the Board. We noted that the Board approved an expenditure of up to $135,500 for the purchase of computer equipment without tender. The approval was based on the representations made by the IT Director at the June 2000 Board meeting. The Board was informed that the purchase needed to be expedited to allow installation of the equipment by the start of the fall term.

We were advised that quotes were solicited over the phone from two recognized national suppliers, but that only one vendor could meet the technical standards and guarantee

delivery before the start of the fall term. However, no documentation of discussions with suppliers or of the analyses of vendor quotes was prepared.

We understand that from time to time, situations arise that require deviations from policy. However, the timing pressure regarding the start of the fall term did not, in our view, constitute sufficient justification for overriding the College's purchasing policy. In addition, by contacting only two suppliers, the College could not be assured that it received the best value for its investment.

4. IS THE COLLEGE TAKING APPROPRIATE ACTION TO MINIMIZE THE RISK OF UNAUTHORIZED ACCESS TO ITS COMPUTER NETWORKS?

We observed that many actions to promote appropriate security have been taken and acknowledge the awareness and concern by IT management for adequate security. However, the College's increasing reliance on technology and the use of the Internet have significantly increased the security risks faced by the College. In light of this environment, we concluded that the College should take additional actions in order to minimize the risk of unauthorized access to its computer networks.

Our key findings are discussed in brief below.

The Need For Periodic Security Reviews

We noted that the College had not recently performed a formal security review. While a security review cannot identify all possible threats and security risks, it can provide valuable information that can be used to significantly reduce security risks.

The Need to Enhance Certain Aspects of Physical Security

Servers house valuable information and programs and should therefore be safeguarded from unauthorized physical access. We found that some servers were located in classrooms where access throughout the day could not be controlled.

The Need to Monitor Access Attempts and Internet Usage

We noted that the College had not activated the log preparation features of its various software programs and as such did not review access attempts or Internet usage. The preparation and review of these logs is central to detecting unauthorized access attempts or identifying inappropriate use of the Internet.

The Need to Better Segregate College Networks

We observed that publicly accessible servers, including e-mail servers, were connected directly to the College's internal network. This connection increases the risk of unauthorized access. To better protect the College's internal network from unauthorized access, publicly accessible servers should not be connected directly to the internal network. Rather these servers should be placed on a separate service network inside the firewall.

The Need to Develop and Communicate Security Policies and Procedures

We noted that the College had not developed comprehensive security polices. In this report, we identified a number of areas where security could be strengthened. These

Other findings included in the detailed report deal with the need to:

- regularly inspect fire extinguishers at the Thompson Campus;
- better protect transmitted information;
- strengthen password controls;
- revoke access privileges of former students and staff;
- "sanitize" equipment prior to disposal; and
- ensure available bandwidth can support needed security measures.

areas should be supported by appropriate policies and procedures. We also found that little had been done to communicate the importance of information systems security to staff and students.

KEY RECOMMENDATIONS

This report includes 29 recommendations. The following list outlines what we believe are the 11 key recommendations.

We recommend that:

- The College develop a multi-year strategic IT plan.
- The College undertake a detailed examination of the adequacy of information and reports generated by their information systems.
- Senior management define the expected service levels to be provided by the IT Department, and communicate these service levels to users.
- Management monitor the actual service levels achieved.
- The IT Department develop help desk service guidelines and identify, track and report outcome-oriented performance measures for its help desk.
- The College conduct a more detailed assessment of the IT training needs of their staff and students.
- The College periodically assess the adequacy of its IT security measures.
- The College restrict daytime access to all rooms or offices that house servers or other network equipment by requiring that these locations be locked at all times.
- The College monitor for unauthorized network access attempts and Internet usage.
- The College better segregate its internal network from publicly accessible servers.
- The College develop and implement policies and procedures to promote a sufficiently secure IT environment.

Introduction

All organizations that rely in whole or in part on public funding need to maximize the value obtained from every dollar spent. Expenditures on information technology (IT) are no exception.

Investments in information technology that are clearly linked to organizational goals can increase an organization's ability to operate in an efficient, effective and economic manner. Within a community college environment, information technology can offer critical support to staff and students for administrative functions such as tracking student records. Also, with access to the Internet, staff members can share leading-edge information with their contemporaries and students can conduct research, thereby enhancing the overall learning environment of the college. In addition, the use of technology for distance education, offers the potential for a college to reach students that may not otherwise be able to take college courses without leaving their communities.

We chose to conduct a value-for-money audit on Keewatin Community College's investment in information technology largely because it has a significant impact on College operations. The effective and efficient use of information technology is a key success factor if the College is to achieve its mission and goals.

About the College

HISTORY AND ORGANIZATION OF THE COLLEGE

Keewatin Community College started operations in The Pas in 1966 under the direction of the Department of Education. In 1993, under The Colleges and Consequential Amendments Act, the College became a self governing institution with a government appointed Board of Directors.

The College's purpose is set out in its mission statement:

> *"Through leadership and innovation, Keewatin Community College nurtures a learning environment that values and responds to the unique needs of our communities and people."*

In order to meet its mission, the College is committed to the following goals:

- to provide education and training to individuals, communities, businesses and industries of northern Manitoba;
- to offer courses on a full or part time basis and at suitable off-campus locations;
- to support the needs of learners through career counselling, academic upgrading and literacy programming;
- to promote partnerships with community development, labour market, and social development agencies; and
- to remove the geographical barriers that limit access to post-secondary education in the North; particularly by using distance education technologies.

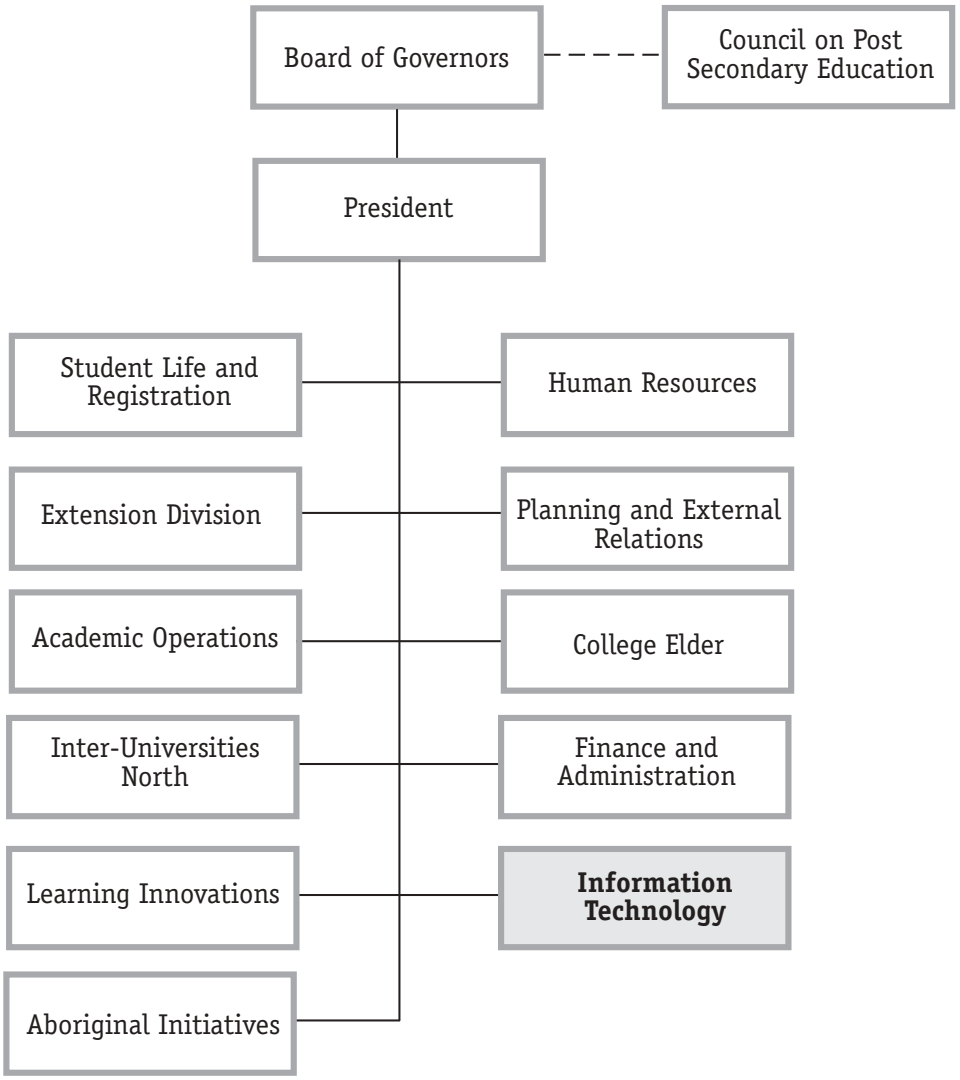
The College serves northern Manitoba and has a geographical intake area of almost 80% of the total area of Manitoba. The population within this geographical area is approximately 79,000 people.

The College offers over thirty diploma and certificate programs in the areas of applied science, technology, business, health, trades, and vocational fields. Campuses are located in The Pas and Thompson, with regional centres located in Cross Lake, Churchill, Flin Flon and Swan River. Approximately 200 academic and administrative staff provide education services to 1,200 full and part time students. In addition, the College provides training to approximately 900 participants in contract training programs. The expenditure budget for 2000/2001 was $17.7 million. Revenues included Provincial grants of $12.1 million.

As reflected in Figure 1, the College is organized into 11 departments, each reporting to the President. For this value-for-money audit, we focussed primarily on the Information Technology (IT) Department.

Figure 1

Keewatin Community College
Organization Chart



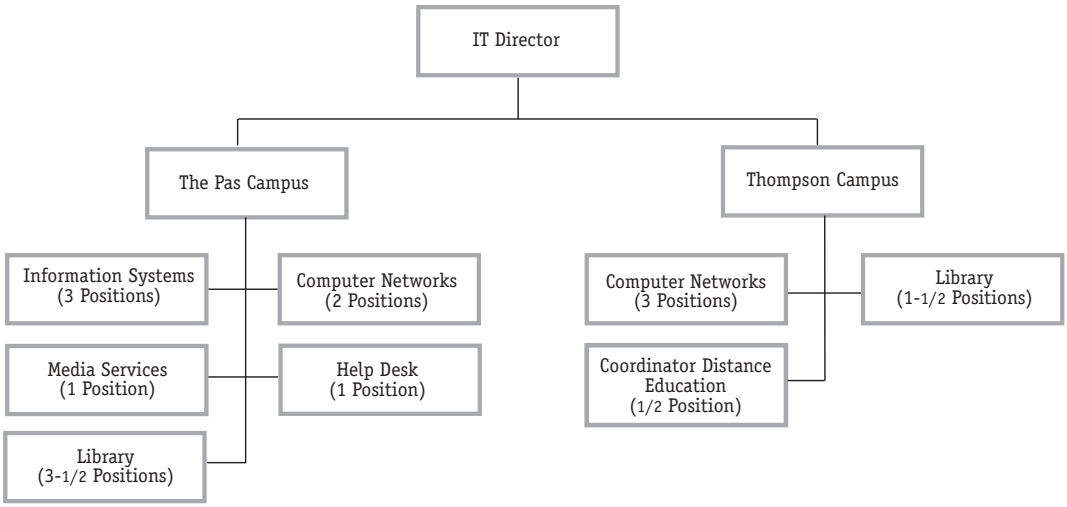
INFORMATION TECHNOLOGY (IT) DEPARTMENT

Organizational Structure

The Director of Information Technology was appointed in January 1999 and reports directly to the President. He manages a complement of 15.5 positions, as shown in Figure 2.

Figure 2

IT Department



Services Provided

Planning

The IT Department advises senior management on how IT can support the overall direction and strategic plan of the College. Specific IT goals were set out in the College's Operational Plan 2000.

Computer systems and networks

The IT Department acquires, installs, and maintains computers and software for academic and administrative users. In addition, the Department designs, implements, operates, and secures the College's computer networks for Internet access, distance learning and certain administrative applications.

Client services

The IT Department helps academic staff integrate computer applications into academic programming by assisting in the evaluation, acquisition and installation of computer related resources for learning, such as educational software packages.

In addition, the Department provides a "help desk" function to assist staff and students on the use of academic and administrative information systems.

Statistical Information

Figure 3 shows a summary of IT expenditures and staffing information. Because our audit focused on the investment in information technology, we excluded student library operations from our scope and from the summary of expenditures and staffing information shown in Figure 3.

Figure 3

Summary of IT Expenditures and Staffing

	Actual 1998/99	*Actual 1999/00*	*Budget 2000/01*	*% Change 1999/00 to 2000/01*
IT Department *(excluding Library Operations)*				
Number of staff positions	8.4	11.25	11.5	
Salaries and staff benefits	$362,200	$525,100	$488,400	(7.0)
Software licences and fees	117,000	58,600	125,800	114.7
Communications	65,500	109,900	129,000	17.4
Travel	22,200	17,200	13,000	(24.4)
Other	52,600	73,300	12,100	(83.5)
Other departments				
Software licences and fees	37,100	58,300	71,300	(63.6)
Total IT Operating	***$656,600***	***$842,400***	***$839,600***	***(0.3)***
IT Capital				
Major computer hardware	$697,700	$296,300	$108,000	(63.6)
Total IT Operating and Capital	***$1,354,300***	***$1,138,700***	***$947,600***	***(16.8)***
Total College Expenditures	***$17,910,300***	***$17,632,300***	***$17,657,700***	***0.1***
IT Operating and Capital as a Percentage of Total College Expenditures	***7.6%***	***6.5%***	***5.4%***	

SYSTEMS AND TECHNOLOGY

Information Systems

Financial and student information is provided, for the most part, by an integrated management and student information system. This commercial software system was installed in 1998/99 and includes the following components:

- student admissions and registration;
- general ledger;
- accounts receivable; and
- accounts payable, and purchasing.

Other information systems used by the College include:

- a library services system that provides students, staff and the public with Internet on-line access to the library's catalogue and to on-line libraries at other institutions;
- a point of sale system for the book stores that records sales and provides information on merchandise inventory;
- an asset management system that records details of assets purchased by the College;
- a personnel management system that tracks sick leave and vacation;
- an on-line attendance tracking system;
- a student card system;
- a housing tenancy applications system; and
- personal productivity tools such as word processing and spreadsheets.

In addition to the above noted information systems, the College uses the services of an external payroll service provider to prepare payrolls and to record individual staff payroll information.

Distance Education

Distance education technology is utilized by the College to deliver real-time interactive classes over the Internet and computer networks. This technology includes video conferencing and a commercial distance education software package.

Electronic Communications

The College maintains internal networks that are linked to the Internet. This structure provides the foundation for connecting all staff and students at its two campuses, four regional centres, and other remote locations.

The College maintains an Internet web site that offers information about the College as well as services such as on-line attendance reporting, access to the College Intranet, a staff directory, and a course and program search feature.

Audit Purpose, Scope and Approach

The purpose of our audit was to answer the following four questions:

1. Is the College making sufficient progress in achieving its information technology objectives?
2. Are information technology systems and services adequately meeting the needs of users?
3. Are information technology purchases economic and effective?
4. Is the College taking appropriate action to minimize the risk of unauthorized access to its computer networks?

Our audit included examining available records and conducting interviews of College officials, administrative staff, and faculty. With respect to Question 2, we also surveyed all College staff regarding their satisfaction with information technology and support services. With respect to Question 4, we obtained the services of a management consulting firm experienced in conducting security reviews. Audit procedures were performed during the period of September 2000 through January 2001.

Our examination was performed in accordance with value-for-money auditing standards recommended by the Canadian Institute of Chartered Accountants, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

Important Considerations

Our research indicates that the demands on information technology departments at colleges and universities across Canada may be overwhelming. This situation results from several factors including the following:

- The transition from a mainframe based computing environment to the rapidly changing microcomputer based environment has increased the nature and demand for services needed by users.
- Today, almost all faculty, administrative staff and students are users of information technology resources and services. Previously, only fractions of these groups were users.
- Colleges and universities are delivering courses over networks, including the Internet and are competing in the delivery of these services. Being able to offer such services requires current computer hardware and software that may be costly.
- Colleges and universities often purchase hardware and software on a piecemeal basis due to funding constraints. As a result, the systems are not standardized across the organization and are, therefore, complex to support.
- Colleges and universities face challenges in staffing information technology positions. These challenges include fewer graduates in computer-related fields, lack of competitive salaries in the higher education environment, and increasing market demand for information technology skills.
- The Internet "revolution" is resulting in the proliferation of personal computing devices and people wanting self-serve access to information from anywhere at any time. Colleges, like other organizations, are affected by this "revolution". The technological infrastructure of computers, networks and software has to be kept up-to-date. Information technology staff need to learn new technologies and stay competent in current ones in order to successfully implement technological changes. Information technology departments may face demands to provide support almost twenty-four hours a day.

We believe these factors have also had an impact on Keewatin Community College.

There are also some unique factors that affect the IT Services at the College. Prior to the appointment of the Director of IT Services in 1999, the College had acquired a new administrative and student information system. Implementation of such a system is a major undertaking and much of the IT Department's efforts have been focused on implementing this system.

In addition to a new Director of IT, the College has also experienced significant changes in other senior management positions in the last few years, including a new President and Director of Finance and Administration. This lack of continuity in senior management makes the job of system implementation more challenging.

The northern location of the College also presents challenges for the IT Department. Attracting qualified and experienced IT staff to northern locations is more difficult than to larger southern cities. In addition, the College has four widely dispersed regional centres, requiring electronic communication lines. While the technology exists, the costs of providing these communication lines places added demands on the College's financial resources allocated to IT.

We acknowledge that these factors have increased the challenges of managing the College's investment in information technology.

In spite of these challenges, our staff survey indicated that 70% of staff believe the service provided by the IT Department improved in the last two years.

Detailed Findings and Recommendations

1. IS THE COLLEGE MAKING SUFFICIENT PROGRESS IN ACHIEVING ITS INFORMATION TECHNOLOGY OBJECTIVES?

WHAT WE CONCLUDED

Although IT objectives were not articulated in a multi-year IT strategic plan, two specific IT objectives were included in the College's Operational Plan 2000. We concluded that significant progress had been made in accomplishing many of the tasks associated with the two IT objectives.

Our audit focused on the development of a multi-year strategic plan and the IT objectives and key tasks set out in the College's Operational Plan 2000. We also looked at the progress made in accomplishing key tasks. In determining what appropriate and practical planning processes should be, we referred to standards for managing information technology issued by the Canadian Institute of Chartered Accountants and the Information Systems Audit and Control Association.

WHAT WE FOUND

1.1 The Need for a Multi-Year IT Strategic Plan

An operational planning process was initiated by the President of the College in November 1999, seeking advice from a broad spectrum of stakeholders regarding the values, programs, systems, and procedures necessary to identify and meet College goals. The planning process was completed in April 2000 and the results were documented in a report entitled Operational Plan 2000 (the Plan). The critical objectives noted in the Plan were to be accomplished by June 30, 2001. The Plan was made available on the College's Web site and was printed and distributed to all staff.

The Plan presented a vision statement and four main strategic priorities, as follows:

- effective fiscal management;
- stability;
- student centered culturally responsive programs and services; and
- service to Aboriginal people.

For each of the strategic priorities, critical objectives were identified. Each critical objective was assigned to either individuals, departments, or teams. The Plan identified 20 critical objectives for the College, two of which were assigned to the Director of Information Technology. Linked to these two objectives were 12 tasks with specific timelines for completion.

We noted that the IT objectives and tasks in the Operational Plan 2000, and the allocation of budget funds to the various operating departments, were established without the benefit of an IT strategic plan.

An IT strategic plan typically sets out a multi-year acquisition plan outlining how the organization intends to increase its use of technology to further its business objectives and how it plans to update hardware and software. The latter helps an organization plan for the orderly and cost effective replacement of technology and helps reduce the potential for business interruptions due to equipment failure.

An IT strategic plan can also describe the risks and lost opportunities associated with not proceeding with the various initiatives in the plan. This information is useful to management in evaluating funding requests because the merits of specific IT expenditures can be better evaluated against the relative merits of other proposed IT projects and of other competing organizational priorities.

We recommend that the College develop a multi-year strategic IT plan.

1.2 Certain Key Tasks had not been Completed

As indicated in Figure 4, as at March 31, 2001, the IT Department had completed or made significant progress in accomplishing most of the tasks associated with the new Management and Student Information System objective. In addition, the IT Department was able to accomplish four of the seven tasks related to the objective of creating an effective communication system.

In reviewing the College's budget for its 2000/01 fiscal year, we noted that funds were not allocated to several of the 12 IT related tasks identified in the Plan. We found that, as part of the budgeting process, the IT Department submitted a budget request for its ongoing operations and for the completion of the tasks assigned in the Plan. However, sufficient resources were not available for the College, as a whole, to fund all requests from its operating divisions. As a result, funding priorities were made by College management that resulted in lower than requested funding for IT.

As illustrated in Figure 5, the IT Department's budget request was under funded for 2000/01 by a total of $399,600 or 31%.

As a result of these funding short falls, the IT Department was not able to complete four of the tasks assigned in the Plan:

1.2.1 Increasing the communication link between The Pas and Thompson to a T1 standard.

1.2.2 Acquiring new servers.

1.2.3 Upgrading staff workstations to at least the College's minimum standards.

1.2.4 Establishing satellite downlinks.

In our view, as discussed below, there were significant operational risks associated with not achieving these tasks.

Figure 4

Critical IT Objectives, Tasks and Status

Objective: The new Management and Student Information System will be fully operational and will provide accurate, accessible information.

Tasks	Status (as at March 31, 2001)
Accurate and relevant monthly financial operating reports should be delivered to users beginning August 2000.	Task completed.
The process for producing the academic calendar should be established by June 2000, so that the calendar will be available in printed form and on the College's website by February of each year.	Task substantially completed. Academic calendar made available from the College's website in March 2000. A printed version followed in two weeks. Procedures for producing the calendar have not been documented.
The process for producing the course offerings should be established by June 2000, so that the course offerings will be available in printed form and on the College's website by March of each year.	Task partially completed. Course offerings were made available in printed form in June 2000, but are not available on the College's website. Procedures for producing the course offerings have not been documented.
Potential students should be able to fill out and submit their admission application form using the Internet website by May 2000.	Task partially completed. Admission application can now be downloaded from the website, but as yet, cannot be submitted using the Internet website.
The College computer network Internet connections for College locations in The Pas and Thompson will have a bandwidth equal to the T1 communication standard by the end of August 2000.	Task not started. Currently the bandwidth connection is 512 Kbps - one-third the speed of the proposed T1 connection. Funds for upgrading the bandwidth were not made available.

Objective: Create an effective electronic communications system.

Tasks	Status (as at March 31, 2001)
Use satellite downlinks to increase the bandwidth connections to the Internet for the Transition Year Program sites by the end of August 2000.	Task not started. Satellite downlink not established. The proposed downlink would be 10 times faster than the current speed of 40 Kbps. Funds for establishing satellite downlinks were not made available.
Upgrade existing servers in The Pas and Thompson. Additional new servers will be used for the distance education software, testing of management and student information systems software and for database services on the College Internet website by the end of August 2000.	Task not started. Existing servers have not been upgraded, nor were additional new servers purchased. Funds for upgrading or purchasing new servers were not made available.
Upgrade staff workstations to at least a Pentium 166 processor, 64MB of memory, a sound card, and CD-ROM reader by the end of August 2000.	Task partially completed. Not all staff computers meet the established minimum requirements. Sufficient funds were not made available to purchase/ upgrade all staff computers to the minimum requirements.
Replace at least one computer lab in Thompson and one in The Pas by the end of August 2000.	Task completed.
Complete the local area network wiring infrastructure at all locations before by the end of August 2000.	Task completed.
Email and Internet access should be available to all students and staff from computers at all College locations by the end of August 2000.	Task completed.
All staff should have access to a personal computer that is connected to the College network by the end of August 2000.	Task completed.

Figure 5

Information Technology Funding Shortfall

Expense Type	Budget Request	Budget Approved	Funding Shortfall
IT operating expenses	$933,500	$768,300	$165,200 or 18%
IT hardware/software	342,400	108,000	234,400 or 68%
Total	***$1,275,900***	***$876,300***	***$399,600 or 31%***

1.2.1 Internet connections between The Pas and Thompson were not increased to the T1 communication standard

The Plan stated that the Internet connections between The Pas and Thompson campuses would be upgraded to the T1 communication standard by the end of August 2000.

Bandwidth directly impacts transmission speed and capacity. At the time of our audit, the bandwidth of the Internet connections was 512 Kbps using frame relay communication services. The proposed T1 standard is 1.544 Kbps or three times the existing bandwidth.

We noted that the IT Department's 2000/01 budget submission included $30,100 to upgrade the communication link between The Pas Campus and the Thompson Campus. However, none of the available funds were allocated by College management for this purpose.

In our opinion, the need to improve bandwidth capacity was critical because:

- the College had expressed the desire to conduct more business over the Internet;
- staff efficiency was being impacted by communication speed; and
- user satisfaction with the distance education technology was also being impacted by communication speed.

Desire to conduct more business over the Internet

We were advised that the College intends to deliver more services to staff over the Internet by expanding on-line services to include student marks and transcripts. As the new services come on-line, staff will make greater use of Internet connections placing greater strain on bandwidth capacity. Traffic in excess of bandwidth capacity will degrade response times and make on-line services less efficient to use.

In addition, as noted in section 4.4.2 of this report, increased bandwidth is also required to facilitate the recommended security measures.

The effect on staff efficiency

During our visit to the Thompson campus, we observed that it took 12 minutes for the system used by the receiving clerk to connect to The Pas network and display the application screens. The clerk commented that this was faster than it would have been had she still been using her previous less powerful computer.

We also talked to a staff member who enters student registration data in Thompson and then transmits the information to The Pas. We were told that data for a single student registration form transmitted to The Pas can take from 10 minutes to a half-hour or more to complete.

In our opinion, both of these situations negatively impact staff efficiency. While there can be several causes for slow response times, bandwidth is a significant contributing factor.

Impact on the distance education program

A lack of bandwidth also adversely affected the distance education program. We were advised by a number of officials and students that distance education courses taught in both the Pas and Thompson experienced problems when instructors performed more than one task at a time. For example, if an instructor tried to show students a spreadsheet and talk at the same time, one or both of the actions would degrade.

1.2.2 New servers were not acquired

The Plan outlined the need to upgrade existing servers in The Pas and Thompson and to install new servers for the distance education software, the testing of management and student information systems software, and for database services provided on the College's Internet web site.

We noted that the existing servers in The Pas and Thompson had not been replaced or upgraded as required in the Plan. We also noted that only $20,000 for one server had been included in the IT Department's 2000/01 budget submission and that none of the available funds had been allocated by College management for the purchase of servers.

The IT Director noted that they "live in fear of system disruptions" and identified the following risks to College systems resulting from the decision to not replace or upgrade servers:

- Storage space on the hard disk of the server handling staff e-mail was almost fully utilized. Because of this, there was a risk that the server could cease to function at any time and disrupt e-mail service until space on the hard disk was cleared.
- At The Pas, 11 desktop computers were being used as network servers. These desk top computers were functioning as servers for a number of critical applications including:
  - distance education,
  - e-mail,
  - Web site,
  - data base management system, and
- testing of the management information system and other software.

Transition Year Program

Students entering a college or university environment often encounter a new and unfamiliar culture based largely on Western traditions. The Transition Year Program (TYP), a community based program, helps students to make a successful transition from remote, northern communities to post-secondary educational institutions by promoting a positive educational experience for northern and Aboriginal students through integrating cultural values and affirming their learning styles and life knowledge.

This practice could hamper the effective and efficient operation of the IT infrastructure because desktop computers lack certain features of servers that would reduce the impact of system failures. These features include redundant hard disk storage and high quality memory chips.

We were also told that the desktop computer used for the human resource database was failing and was subject to frequent crashes. Because this computer is a different format from other College computers, the College cannot easily replace it if it fails. If the human resource computer cannot be repaired, the College could lose valuable data and may be required to re-enter the data into another computer data base.

1.2.3 Not all workstations were upgraded to the College's minimum standards

The Plan called for the upgrading of staff workstations to at least a Pentium 166 processor, 64MB of memory, a sound card, and CD-ROM reader.

We noted that the IT Department's 2000/01 budget submission included $66,700 for 34 staff workstations and various component upgrades. While available documentation was not clear, IT management advised that approximately one-half of this amount was included in the College's allocation of available funds.

We were advised that the College buys a number of new computers each year, based on available funding. However, we found that a computer replacement plan that schedules the orderly replacement of computers over multiple years was not developed. Specifically, a detailed list of required upgrades and replacements to be completed by the Fall 2000 term was not prepared. In addition, a listing was not prepared of which computers were assigned to which staff members. We were therefore unable to determine how many staff were still using computers that did not meet the College's minimum standard.

The IT Department acknowledged that some staff computers did not meet the minimum College standard despite the IT Department's efforts to strategically acquire and reallocate computers. We noted that some staff received new computers and others had their less powerful computers replaced with more powerful computers that were previously located in a computer lab.

Upgrading all staff computers to the minimum standards needed to ensure the efficient operation of the new Management and Student Information System software is important. Powerful computers are required to properly run the software. In addition, a lack of "computer power" can affect the operation of other systems. We noted that 11.5% of respondents to our staff satisfaction survey (discussed in greater detail in our findings for Question 2) reported problems with "crashes" and "freezes", particularly when using On-Line Attendance, e-mail, and the Internet. These problems, at times, can be caused by a lack of computer power or memory on the computer.

We are also concerned that the minimum standard established for staff computers is too far behind the current level of technology to efficiently run new programs that require more powerful computers. As a result, the College is likely to understate its actual desktop computer needs if it continues to use the current standard of 166 MHz computers for determining which staff computers require upgrading or replacement.

We recommend that the College develop a computer replacement plan and review its current minimum standard for staff desk top computers to ensure the standard is sufficient to effectively run College software.

1.2.4 Satellite downlinks were not established

The Plan outlined the College's intention to use satellite downlinks to increase the bandwidth connections to the Internet for the Transition Year Program sites in Nelson House and Norway House. We noted that the IT Department's 2000/01 budget submission included $8,000 for satellite downlinks. However, none of the available funds were allocated by College management for this purpose. Without satellite downlinks, they must dial-in over regular phone lines. This type of connection is much slower than a satellite downlink. Satellite downlinks would improve the visual and audio quality of distance education presentations.

2. ARE INFORMATION TECHNOLOGY SYSTEMS AND SERVICES ADEQUATELY MEETING THE NEEDS OF USERS?

WHAT WE CONCLUDED

We concluded that while College staff believe that systems and services have improved over the last two years, additional system and service enhancements are required to ensure that:

- staff are satisfied with the nature and quality of information available;
- staff and students can rely on the technology;
- the help-desk function is as effective as it should be; and
- staff and students have access to the IT training they require.

We reached this conclusion by examining the following criteria in relation to four basic user needs:

Timely, accurate and relevant information

2.1 Staff should be satisfied with the nature and quality of information generated by the information system.

Reliable technology

2.2 Service levels should be defined and monitored.

2.3 User requests for changes to systems or reports should be effectively managed.

2.4 Formal standards and procedures for supporting information technology should be in place.

2.5 Complete asset management records should be maintained to account for information technology components.

Assistance in using technology when needed (including manuals)

2.6 User requests for information and assistance with IT problems should be resolved in an appropriate and timely manner.

Training in the use of technology

2.7 Staff should have access to training opportunities.

Criteria were derived from standards for controlling information technology issued by the Canadian Institute of Chartered Accountants, and the Information Systems Audit and Control Association.

To assess these criteria we:

- examined available documentation relating to requests for changes to systems and the activities undertaken in response to the requests;

- conducted interviews with College officials, administrative staff, academic staff and students; and
- conducted a "mail back" survey to assess staff satisfaction with current systems and IT support services.

Understanding user satisfaction

Many organizations have made a significant investment in their IT infrastructures. This investment would include the cost of computers, software and IT support staff. To ensure that they are receiving value for their investment, organizations should periodically determine the level of user satisfaction.

By measuring user satisfaction, organizations can better determine if user needs are being met and can identify opportunities to improve services. In addition, by measuring user satisfaction at regular intervals, an organization can determine whether its improvements in IT services are, over time, resulting in the desired effects.

We found that the College and the IT Department had not developed a process to formally measure user satisfaction with IT systems and services. As a result, as part of our audit process we conducted a staff satisfaction survey. We achieved an overall response rate of 49%. The results of the survey are discussed in pertinent sections throughout this report. We found the survey useful in identifying areas where service improvements could be made. We believe that the College could benefit in a similar way by conducting regular surveys and in using the results to plan service improvements.

WHAT WE FOUND

2.1 The Need to Ensure Staff Users are Satisfied with the Nature and Quality of Information and Reports

Organizations invest significant resources to ensure that information systems produce timely, accurate, and relevant information. If required information is not generated by the system, or if it is not timely, the organization may not be as efficient in pursuing its objectives and in processing its transactions as it should be. For example, staff may pursue other avenues to obtain the information they require, such as maintaining their own data files, spreadsheets or offline databases instead of relying on the main information systems.

We did not conduct an audit of the adequacy of the information and reports generated by the College's various systems. In our view, one of the best measures for the adequacy of information generated is the level of user satisfaction. As such, we gained insight into this area by surveying staff on their satisfaction with information received.

Overall, we believe the survey responses indicate that the College should continue pursuing improvements to the information and reports generated by its information systems. While 33% of respondents expressed overall satisfaction with information and reports produced by the various systems and believed that information had improved over the last two years, 30% stated that they were dissatisfied and 23% believed that information and reports were now worse than two years ago.

Staff satisfaction with Accounts Receivable reports scored the lowest among all system reports with regards to availability, quality, and the accuracy of the reported information. Staff reported problems with inaccurate and inconsistent information, inaccurate aging of accounts, and no link to an invoicing module.

Staff also reported problems with three other systems – Class Lists, Registration, and Purchasing. Common problems reported included:

- "inaccurate/not up-to-date data";
- "takes too long to retrieve/slow"; and
- "information not timely/late".

Respondents also made comments and suggestions for improving reports and information to better meet their needs. These included:

- "need invoicing system";
- "timely and accurate information is required";
- "would like read-only access for all reports";
- "update class lists more frequently"; and
- "the number of reports would be reduced if the systems were fully integrated".

We recommend that the College undertake a detailed examination of the adequacy of information and reports generated by their information systems.

2.2 The Need to Define and Monitor Expected Service Levels

The level of support that an organization can reasonably expect from an information technology support function is largely determined by the level and quality of human resources made available and the quality of hardware and software. With these factors in mind, an organization should define the service levels expected and provide resources accordingly. Service levels can be defined in a number of ways including system response times, security provided, and system functionality. Expected service levels should be communicated to users and should serve as performance criteria to measure the quantity and quality of service levels achieved. Appropriate actions should be taken to address performance shortfalls.

We found that the College had not defined expected service levels, nor was it tracking service levels achieved. Understanding service levels achieved, in relation to expected levels, would help the College determine the adequacy of both its technological capacity and the level of human resources devoted to the IT Department.

Because expected service levels were not defined or tracked by the College, we could not conduct a direct review and assessment of the adequacy of service levels provided by the IT Department. However, our survey results indicated that there was a need to either improve service levels, or to better communicate reasonable service level expectations to staff. While 63% of respondents were generally satisfied with the IT Department's current service delivery, 1 in 5 (21%) were not satisfied with current service delivery.

We recommend that senior management define the expected service levels to be provided by the IT Department, and communicate these service levels to users.

We recommend management monitor the actual service levels achieved.

2.3 The Need to Better Manage Requests for Changes to Systems

Changes to an organization's information systems are inevitable as management responds to the demands of a changing environment. Organizations must carefully manage this change process in order to ensure its information systems continue to address the needs of its users.

Organizations should log requests for changes to a system, assess these requests for needed action, prioritize the requests and monitor progress made in responding to the change requests. Once a solution has been developed, users should formally test and approve the proposed changes to the system. This helps to ensure that the problem has been appropriately addressed. Dealing with change requests in a timely manner minimizes the likelihood of disruptions to users over a prolonged period of time caused by system errors or systems that do not address important user needs.

We found that the IT Department did not have a defined process in place for managing routine activities such as service requests and system change requests.

We noted three areas of concern, namely: (2.3.1) documenting requests, (2.3.2) determining service request priorities, and (2.3.3) user sign off when service projects have been completed.

2.3.1 Service requests should be documented

We were advised that typically, requests for services are made orally to IT Department staff. We examined a one page hand written listing identifying 12 requests for system changes, but we were told by IT staff that the list was not complete and that at least four additional tasks were not listed. We noted that the listing only described the requests in a few words, for example “course outlines”.

We also noted that while the IT Department has a form to document service requests (Request for IS Services form), they did not use it. However, we believe the form is useful because it is designed to collect valuable information that would facilitate assessment, prioritization, and management of the change requests.

2.3.2 Requests for service should be prioritized

When assessing whether, or how quickly, user service requests should be acted upon, an organization should:

- determine the urgency of the change and the impact on the organization of not proceeding;
- understand the risks associated with the change including the effect of the change on system controls and the impact on other systems or processes;

- develop a contingency action plan in case of unforeseen delays or problems that may occur during the system change, particularly when undertaking major system changes;
- outline the activities that must take place prior to implementing the change; and
- estimate the cost of resources to make the change.

We found that the IT Department followed an informal process when evaluating service requests and did not document what factors were considered in arriving at decisions. Because of the lack of documentation, we were unable to determine whether specific requests for changes were acted upon in a timely and prioritized manner. In our survey, we asked staff to comment on how responsive the IT Department was to their service requests. While 53% of respondents believed that they received "immediate" attention to their service requests and problems, 34% reported that their problems were never resolved.

2.3.3 Users should sign off regarding satisfaction with work completed

We were advised that at the completion of a project, if the user is not satisfied with the change, the IT Department will continue to work on the system change until the user is satisfied. Because most of the communication between the IT Department and other College staff is oral and not documented, we were unable to review this process.

We recommend that the IT Department strengthen their process for managing requests for changes to information systems.

2.4 The Need to Develop and Document Standards and Procedures for Supporting the Technological Infrastructure

Standards and procedures for supporting an organization's technological infrastructure are important because they help prevent, or minimize the impact of, disruptions in computer services. The risk of disruptions is reduced because:

- computer hardware and software are more likely to be installed, configured and operated in a consistent and appropriate manner; and
- other support functions, such as recovering from computer system "crashes", backing up data, and maintaining hardware are more likely to be performed in a timely and orderly fashion.

We found that the IT Department lacked adequate documented procedures and standards for supporting the technological infrastructure. Documentation was limited to hand-written notes and instructions for installing Windows 2000, and the minimum technical requirements for desk top computers.

We recommend that the IT Department establish and document minimum standards and procedures for operating and supporting the technological infrastructure.

2.5 The Need to Maintain Complete Asset Management Records to Account for Information Technology Components

Maintaining complete records of information technology assets is a necessary component of an organization's efforts to manage and safeguard those assets. Asset management records should identify information technology components and associated information, such as physical location, serial and model numbers, configuration details and software licenses. These records are an important control feature because they help an organization account for all information technology components, and are essential in conducting periodic verifications of physical existence. In addition, when configuration details are noted, these records facilitate the efficient management of changes to technological infrastructure components.

While a record of IT equipment is maintained for financial accounting purposes, we were unable to locate an IT inventory list detailing information about the assets, such as component parts, physical location and configuration details. As a result, the IT Department could not tell us the specific computer configuration (hardware and software) assigned to individual staff members or which staff had computers that did not meet the College's established minimum standards. Because there are no records of which computers are loaded with which programs, the College also runs the risk of unknowingly violating software license requirements, exposing themselves to potential liability.

We recommend that the College develop an inventory listing of IT equipment that captures necessary information such as components information, physical location and configuration details.

We recommend that periodic physical counts be conducted.

2.6 The Need to Better Manage the Help Desk

Within any organization, system users will periodically require on-the-job assistance. Therefore, a help desk function should be available to assist users. The help desk function should record and monitor the progress of incidents. Guidelines should be established for determining the priority of problems and the most appropriate staff person to refer them to. The help desk function should also identify outcome-oriented performance measures and track and report on its performance.

A help desk function helps to ensure that any problem experienced by a user is appropriately resolved. Moreover, it promotes the proper use of computer hardware and software.

We found that the IT Department provided a dedicated help desk function at The Pas campus staffed by one full time IT staff. We observed that the help desk staff provided staff and students with solutions directly or passed them on to other resources that could provide the needed help.

At the Thompson campus, the help desk function was not staffed by a specific individual, rather the duties were shared by the four IT staff at that location.

We identified the following three problems related to the help desk function:

2.6.1 Help requests should be documented and their status monitored

We were advised that requests for assistance are submitted to the help desk by a variety of means including e-mail, in-person, and by telephone. We noted that the help desk may temporarily keep help requests received by e-mail, but generally, the help desk did not document and monitor help requests. As a result, help requests could be lost or forgotten.

2.6.2 The process for establishing priorities should be better defined

We were advised that IT staff rely on their experience and judgement in prioritizing requests for assistance. Help desk staff advised that they give top priority to computer problems occurring during the actual delivery of a class, followed by administrative system problems, and finally other staff and student problems. If they cannot resolve a request, they will consult with the IT Director.

We found, however, that there were no documented guidelines for the operation of the help desk including prioritizing requests and escalating the handling of requests. As a result, there is increased potential for the inconsistent treatment of similar help requests.

2.6.3 Outcome-oriented performance measures should be developed and tracked

We found that the College had not developed any performance measures for the help-desk function, nor had any performance information been gathered. Examples of outcome-oriented performance measures include satisfaction ratings from user satisfaction surveys, length of time before a call is answered, length of time before work begins on a problem, and the amount of time to fix a problem.

In addition, accumulating information on inputs, such as the number, time of day and nature of calls received, would be useful in managing help desk resources and troubleshooting more problematic systems that could require broader corrective actions. For example, in our survey, respondents identified their most problematic system as on-line attendance followed by registration, e-mail, the management and student information system, the Internet, and the distance education system.

We recommend that the IT Department develop help desk service guidelines and identify, track and report outcome-oriented performance measures for its help desk.

2.7 The Need for Appropriate Training Opportunities

In order for an organization to maximize the value it receives from investing in information technology, the organization must ensure that staff receive appropriate timely training on the systems and automated productivity tools available to them.

While we did not audit the training opportunities available to staff or the adequacy of existing user manuals, instructions and on-line help functions of available software programs, our survey results indicate that these are areas that require some attention.

In particular we noted that almost half of the respondents to our survey indicated that they were not satisfied with the content, availability, and timeliness of training opportunities.

The training most requested by respondents related to learning how to better use the office productivity tools such as word processing, spreadsheets, e-mail and presentation programs. 12% of respondents also requested more training in distance education programs.

In addition, we noted that approximately a third of the respondents to our survey indicated that they were not satisfied with the availability and usefulness of user manuals, instructions, and on-line help.

We interviewed a small sample of students at the College. We found that individual training needs varied depending on the course the student was enrolled in, previous exposure to computers at school or the work place, and the availability of a computer at the student's residence. We noted that students from remote locations in Manitoba were more likely to indicate that they did not have much access to computers prior to attending the College.

The students told us that more training and information on how to use College computers, printers and related equipment and services would help them. They explained that there was a general lack of information related to obtaining computer service and help. This lack of information particularly affected new students. In addition, they indicated that the College should offer more training for students who have not had previous exposure and experience with using computers.

Students also told us that there was a need for greater accessibility to computers when and where they needed them. They pointed out that the College did not provide a list of locations with computers they could use or staff who could help them. They said that this knowledge was usually gained by word of mouth, but again, this lack of information had a greater impact on new students who had not yet "learned the ropes".

We recommend that the College conduct a more detailed assessment of the IT training needs of their staff and students.

2.8 Other Matter - Distance Education

During the course of our audit, a number of other concerns regarding distance education programs were raised by staff. Because distance education was identified by the College as a key enabler in achieving its mission, we followed up on these concerns.

Instructors who use distance education technology reported that the distance education equipment was not adequate and was in relatively poor condition. They added that IT technical support was not always immediately available when equipment or technical problems occurred during a class and that this resulted in class interruptions and delays. Instructors also felt that there was a general lack of instructor support and training related to using the distance education computer program and other distance education instruction media.

We also noted a lack of information regarding student uptake and program inputs, outputs, and outcomes.

We recommend that management conduct a detailed evaluation of its distance education program.

3. ARE INFORMATION TECHNOLOGY PURCHASES ECONOMIC AND EFFECTIVE?

WHAT WE CONCLUDED

We concluded that the College's purchasing policies would foster economic and effective acquisitions, and that recent purchases have contributed to increased standardization. However, we identified certain IT purchases where the College did not comply with key aspects of the approved purchasing policies. In particular, we are concerned that a significant IT purchase was made without due regard for demonstrating that value for money was obtained.

We reached this conclusion by examining the following criteria:

3.1 The technological infrastructure (computers, including the operating systems and the peripheral components, and common application software) should be standardized to an appropriate extent.

3.2 Appropriate purchasing policies and practices should be in place.

An additional aspect in ensuring IT acquisitions are effective involves having an appropriate planning process to guide acquisition priorities. In our view, effective acquisitions are those which support the business and academic objectives of the College and promote the efficient functioning of the IT infrastructure and support functions. The lack of a strategic IT plan is discussed in Question 1.

WHAT WE FOUND

3.1 The Need for Greater Standardization of the Technology Infrastructure Components

Technology infrastructure is the backbone of an organization's information systems. While this backbone can be comprised of multiple different products and still function, standardization across an organization, to the extent practicable, helps to maximize cost effectiveness. Standardized technology helps to:

- reduce the support effort because there are fewer software and hardware products to understand and maintain;
- share information electronically between staff members, such as e-mail or word processing documents, because they use the same products; and
- reduce the IT training effort as staff members transferring between departments are less likely to encounter unfamiliar new products.

Developing standards for all IT equipment can reduce the risk of purchasing equipment that is not compatible or that adds unnecessarily to hardware diversity.

We looked at the various hardware and software components that together make up the College's technology infrastructure. While we noted opportunities to improve standardization, we also noted that the current IT Director has made significant improvements in this area since his appointment in 1999.

In the sections that follow, we discuss the degree of standardization in relation to (3.1.1) desk top equipment, (3.1.2) application software, and (3.1.3) networking and peripheral equipment.

3.1.1 Desk top equipment should be more standardized

The College established their minimum standard for staff desk top computers as IBM compatible Pentium 166MHz computers with 64MB memory. However, as noted in Section 1.2.3, not all staff computers at the College met this standard.

Recent desktop computer purchases were made with "standardization" in mind. In addition to exceeding the minimum standard for staff desktop computers, the specific components for each computer purchased were specified by the IT Director to ensure increased standardization with the existing infrastructure at the College. Nevertheless, we determined that, overall, computers used at the College were from a variety of manufacturers and represented a wide variety of generations of computer hardware. While the College has made significant progress, we believe greater standardization is desirable. The College's composition of desktop computers very likely increased the complexity of providing support services, and reduced the efficiency of the IT Department.

3.1.2 Application software was reasonably standardized

We noted that the College standardized on one office application software for basic office functions such as word processing, spreadsheets, e-mail and Internet access. In addition, we observed that the College used common application software for accounting and student information.

However, we noted that the operating system at Thompson was an older version of the operating system used in The Pas. We were told that while the operating system used at The Pas was better suited to the needs of the College, not all of the computers used at Thompson had enough power to run the system. As a result, IT staff had to support two operating systems, thus increasing the complexity and reducing the efficiency of the support function.

3.1.3 Networking and peripheral equipment should be more standardized

We noted that the IT Department had not developed standards for networking and peripheral hardware such as servers, routers, and printers. As a result, a mix of equipment was used. As noted in Section 1.2.3, several desktop computers were being used as network servers for a variety of functions.

We recommend that the College develop standards for all components of the technological infrastructure.

3.2 The Need to Comply With Purchasing Policy

The College's purchasing policy sets out an appropriate vendor selection process. The policy requires competitive quotes for purchases between $2,000 and $10,000, a formal tender process for orders in excess of $10,000, and Board approval for all purchases greater than $50,000. In addition, the policy was amended in January 2000 to require

the IT Director's approval for purchases of computers, software or other IT equipment. Prior to this, the IT Director's approval was not required.

However, we are concerned regarding:

3.2.1 the inconsistent approval of purchase orders by the IT Director, and

3.2.2 the failure to tender a major IT equipment contract.

3.2.1 All IT purchase orders should be approved by the IT Director as required by College policy

We examined a sample of six IT purchase orders initiated by College departments other than IT subsequent to January 2000. These purchases totaled $52,658 and represented 34.2% of total annual IT purchases by other departments. We found that three were not approved by the IT Director ($28,008/53.2%).

While the IT Director indicated that he was aware of the requisitions and concurred with the purchases, we are nevertheless concerned with the inconsistent approval of purchase orders. IT services can play a key role in helping managers understand their IT equipment needs and in making appropriate choices. Processing purchase orders without the signature of the IT Director increases the risk that incompatible or inappropriate purchases will be made.

We recommend that the College ensure their policy regarding the approval of IT purchase orders by the IT Director be complied with.

3.2.2 A significant purchase was not tendered

We examined a recent major purchase of computers. The IT Department purchased 80 computers from a nationally recognized supplier for a total of $109,000. The purchase was not tendered as required by the College's policy, and the Agreement on Internal Trade (AIT). The AIT, which came into effect in July 1995, provides a framework to ensure equal access to trade opportunities for all Canadian suppliers. The AIT requires that, effective July 1, 1999, all purchases of goods and services over $100,000 and construction valued over $250,000 be subject to an electronic tendering process. In Manitoba, Colleges and Universities can post and distribute tenders on the MERX system, an electronic tendering bulletin board, at no charge.

The IT Director told us that he solicited quotes over the phone from two recognized national suppliers. The IT Director also advised that he chose the vendor that offered the lowest price, could meet the technical standards, and could guarantee timely delivery of the computers. However, a documented analysis of the vendor quotes to support the choice of vendor was not prepared.

We also noted that the Board, at its June 2000 meeting, received information regarding the purchase. The material explained that:

- Board approval was required for all purchases greater than $50,000 and that formal tendering was normally expected for purchases greater than $10,000;

- the Board had previously designated an approved vendor from whom the IT Department could purchase computer supplies without tender, but that this vendor could no longer meet all of the specifications of the IT Department;
- the purchase had to be made quickly in order to complete the upgrades to student computer labs prior to the start of the 2000/01 academic year;
- the lowest price was not necessarily in the best interest of KCC because, for computer equipment, after sale service and warranty service from the vendor was a critical factor; and
- small vendors were not able to guarantee prompt supply of identical product in the quantities required. Identical computers from one source, at one time, were required in order to streamline configuration, installation and internal documentation.

Based on this information, the Board approved the expenditure of up to $135,500 for the purchase of computer equipment without tender and the IT Director subsequently authorized the purchase order.

We understand that from time to time, situations arise that require deviations from policy. However, the timing pressure referred to in the submission to the Board does not, in our view, constitute sufficient justification for overriding the College's purchasing policy or the tendering requirement set out in the AIT. By contacting only two suppliers, one of which was the previously pre-approved vendor who could not meet all of the required specifications, the College could not be assured that it had received the best value for its investment.

As a public institution, we believe the College has a greater duty to demonstrate the prudent expenditure of funds – the best value at least cost.

4. IS THE COLLEGE TAKING APPROPRIATE ACTION TO MINIMIZE THE RISK OF UNAUTHORIZED ACCESS TO ITS COMPUTER NETWORKS?

WHAT WE CONCLUDED

We observed that many actions to promote appropriate security have been taken and acknowledge the awareness and concern by IT management for adequate security. However, the College's increasing reliance on technology and the use of the Internet have significantly increased the security risks faced by the College. In light of this environment, we concluded that the College should take additional actions in order to minimize the risk of unauthorized access to its computer networks.

We reached this conclusion by examining the following criteria:

4.1 An organization should perform a periodic assessment of its security environment and take action to reduce risks and threats to IT operations.

4.2 Controls to physically safeguard IT assets should be in place.

4.3 Controls over electronic access to information and systems should be in place.

4.4 The infrastructure configuration should promote a secure environment.

4.5 Security policies and procedures should be in place.

WHAT WE FOUND

4.1 The Need for Periodic Security Reviews

Managing the security risks associated with physical and electronic access to information, hardware and software is an essential element in safeguarding an organization's investment in information and related technology. As a result, an organization should periodically assess the effectiveness of security controls in place. To be practical and cost effective, the rigor of the assessments should be commensurate with the sensitivity of the information, and the value of hardware and software. Deficiencies and concerns arising from the assessments should be resolved on a timely basis to ensure controls are adequate to safeguard hardware from theft or damage, and software and information against damage, loss, unauthorized use, disclosure, and modification.

We were advised that the College had not recently performed a formal security review.

In our discussions with IT Department staff, we found a general high degree of security awareness. As a result, the IT Department has been able to provide a reasonably sound level of security.

We believe however that the IT Department's ability to continue ensuring adequate security is complicated by a number of factors including:

- multiple College locations and long distances between locations;

- requirement for heightened levels of security as the College continues to increase the services available on the College web site and expands the use of technology; and
- limited resources available.

We recommend that the College periodically assess the adequacy of its IT security measures.

4.2 The Need to Enhance Certain Aspects of Physical Security

An organization should have adequate physical security to protect its hardware, software, and information. Protection is required from physical threats such as fire, theft, and vandalism. Physical security includes the protection offered by the building and by allowing physical access to only authorized personnel.

We identified concerns regarding: (4.2.1) fire extinguishers, and (4.2.2) after hours access.

4.2.1 Fire Extinguishers should be regularly inspected

We found that the fire extinguishers at The Pas campus were examined monthly. We believe, however, that the Thompson facilities should be better protected from the risk of fire.

We are concerned about fire safety in the three buildings that comprise the Thompson campus. These buildings were converted from apartments to classrooms in 1989/90. Each three story building is constructed of wood and each has a long narrow center hallway with stairs wells at each end. There are no other fire escapes. While two or three fire extinguishers are located on each floor, we found that they had not been regularly inspected. During our visit in January 2001, we examined 25 fire extinguishers in the three buildings and found that 20 had not been inspected for varying time frames ranging from March 1992 to October 1998. The remaining five had last been inspected in September 2000.

We also reviewed fire inspection reports from the City of Thompson prepared in August 2000. These reports listed seven fire extinguishers requiring service. The reports also required that the College service some exit lights and have their fire and emergency lights tested annually by a qualified person.

We recommend that the College inspect, on a monthly basis, the fire extinguishers at the Thompson campus.

4.2.2 "After Hours" security measures should be strengthened and better door locks utilized

We observed that there were limited controls over persons entering College buildings after regular classroom hours. Off hour visitors could enter the buildings without signing the visitor's log or otherwise registering with security. In addition, while the large size of the buildings at both campuses makes effective patrol by the security staff difficult, only limited use is made of video surveillance.

Servers house valuable information and programs and should therefore be safeguarded from unauthorized access. We found, however, that some servers were located in classrooms where access throughout the day could not be controlled. We also noted that some of the other rooms or offices that housed servers or other network equipment were locked at night but not during the day, even when left unoccupied. In addition, only standard key locks were used on these doors rather than more secure locks.

We recommend that the College strengthen after hour security measures.

We recommend that the College restrict daytime access to all rooms or offices that house servers or other network equipment by requiring that these locations be locked at all times.

We recommend that the College utilize high security type locks for rooms or offices that house servers.

4.3 The Need to Better Restrict Electronic Access.

A secure organization must ensure that systems and data are protected from unauthorized electronic access. This is required to protect systems and data from alteration, loss, and unauthorized use. Electronic access can occur from network connections, dial up connections and web site connections.

We identified concerns regarding (4.3.1) the protection of transmitted information, (4.3.2) the adequacy of password controls, (4.3.3) the monitoring of access attempts and Internet usage, (4.3.4) the access privileges of students and staff no longer attending or employed by the College, and (4.3.5) handling of data storage devices prior to disposal.

4.3.1 Transmitted information should be better protected

We were advised that the College did not encrypt data when transmitting between College locations over the Internet. Some of this data would include sensitive or private data such as personal and health information.

We recommend that the College encrypt sensitive information when transmitting between locations.

4.3.2 Password controls should be strengthened

We noted that the College did not require that students and staff use a random alpha numeric combination in establishing their passwords. Typically, many computer users pick a password that is easy to remember such as their name or student number. Such passwords however can be easily guessed by others. Prior to the introduction of the Internet, such passwords did not pose a significant security concern. However, potential access through the Internet significantly increases the College's exposure to unauthorized users and heightens the need for more rigorous password controls.

We recommend that the College strengthen the password controls by educating users on the importance of more complex passwords.

4.3.3 Access attempts and Internet usage should be monitored

We found that the College had not activated the log preparation features of its various software programs and as such did not review access attempts or Internet usage. The preparation and review of these logs is central to detecting unauthorized access attempts or identifying inappropriate use of the Internet.

As a result, IT staff were not aware of unauthorized network access attempts nor were they aware of the Internet sites being viewed through College computers. Information on access attempts would help the College identify and rectify key vulnerabilities. Likewise, by monitoring Internet use, IT staff could determine if staff or students were accessing web sites deemed inappropriate by management and take appropriate action to 'block" access to these sites or remove a user's access to the Internet.

In addition, the College could further limit its potential liability from the possible misuse of the Internet by informing users of its monitoring policies and practices, as well as its policy against using the Internet for illegal or inappropriate purposes. This could be accomplished by a logon banner.

We recommend that the College monitor for unauthorized network access attempts and Internet usage.

4.3.4 Access privileges of students and staff no longer attending or employed by the College should be revoked

We found that the College did not ensure that the access privileges of former students and staff were revoked on a timely basis. IT staff indicated that in most cases, the removal of former students and staff only took place when the system administrator heard about a departure. The College was unable to provide us with a list of former staff and students with active access rights.

In addition, user accounts and access rights are not suspended when a staff member or student has not used their account for a considerable period of time, say 60 days. Inactive accounts increase the risk that an unauthorized individual could access systems and data using the inactive account and not be detected.

We recommend that the College revoke, on a timely basis, access privileges for withdrawing or graduating students and for employees who leave the College's employ.

We recommend that access privileges be suspended when staff or student accounts are not accessed for an extended period of time.

4.3.5 Computer hard drives, removable hard disks, diskettes, and tapes should be sanitized prior to disposal

We noted that the College held a "Garage Sale" in June 2000 where surplus office furniture, machinery and computer equipment was sold to the public. The listing of items available for sale included over 100 computers. The hard drives of these computers may have contained data related to the College. Staff indicated that these items were not "sanitized" prior to the sale.

We recommend that the College sanitize (erase) all computer hard disks, removable hard disks, diskettes and tapes prior to disposal.

4.4 The Need to Ensure the Infrastructure Configuration Better Promotes a Secure Environment.

An organization should ensure that its infrastructure configuration is sufficient to support its security measures. The infrastructure includes not only the computers and networks, but also the connections between various locations.

With respect to the College's infrastructure configuration, we identified several opportunities to decrease the risk of unauthorized access to its systems. These were brought to management's attention in a separate report. Among the issues reported was the need to better segregate internal networks and to ensure the infrastructure could support needed security measures.

4.4.1 College networks should be better segregated

Publicly accessible servers, including e-mail servers, are connected directly to the College's internal network. This connection increases the risk of unauthorized access. To better protect the College's internal network from unauthorized access, publicly accessible servers should not be connected directly to the internal network. Rather these servers should be placed on a separate service network inside the firewall.

We recommend that the College better segregate its internal network from publicly accessible servers.

4.4.2 Communication bandwidth should support security needs

We noted that the College used a band width of only 512k for their communications between the two main campuses and the Internet. This would not be sufficient to allow for the logging and monitoring controls that we recommended earlier to promote an appropriate level of security.

We recommend that the College upgrade the communication band width to T1 capacity to better accommodate security measures.

4.5 The Need to Develop and Communicate Security Policies and Procedures

An organization should develop and enforce appropriate policies and procedures regarding security of systems, data, and electronic communications. Policies help ensure that users do not unknowingly jeopardize the organization's security measures.

We found that the College had not developed comprehensive security policies. In this report, we identified a number of areas where security could be strengthened. These areas should be supported by appropriate policies and procedures.

We also found that little had been done to communicate the importance of information systems security to staff and students. Following the development of security policies and procedures, the College should provide all staff and students with a list of key policies in order to foster compliance. In addition, the College should develop a security awareness program.

We recommend that the College develop and implement policies and procedures to promote a sufficiently secure IT environment.

We recommend that the College develop and implement a security awareness program for all staff and students.

College Response

The College would like to express its appreciation for the efforts of the Office of the Provincial Auditor in conducting the value-for-money audit. We also appreciate the considerable time that the Auditors provided to us while reviewing their findings and recommendations with the Information Technology division staff. KCC agrees with most of the findings. Even before the audit began, KCC was in the process of implementing many of the recommendations ultimately presented. The College's information technology aspirations were documented and included in a college-wide vision statement called Plan2000. Although this plan contemplated a one-year horizon, the financial and human resources available to accomplish its objectives were limited, and KCC senior management did recognize that more time would be required for completion. As of September 2001, most of the desired IT objectives listed in Plan2000 are completed.

Certain recommendations identified by the Office of the Provincial Auditor cannot be achieved with the current financial resources allocated to the Information Technology division. KCC was not given additional operating or capital grants to finance necessary Year 2000 system changes. The scope of the changes, beginning in 1998, was dramatic: the College completely replaced its student records and financial systems with one integrated system; switched from an Apple-based to a PC-based desktop system; switched from an AppleTalk-based to an Ethernet-based network; switched to Microsoft Server from Apple-based Operating Systems.

Financial resources allocated to the Information Technology division were increased after the adoption of Plan2000, although they were limited to the amounts shown in Figure 3. This allowed some Information Technology initiatives to proceed and ensured that services to students were not negatively impacted. The Information Technology division continues to receive this level of funding, enabling it to continue its progress in completing the original objectives of Plan2000. Now that technology infrastructure and systems are in place, the division is focusing on fine-tuning existing services and systems rather than adding new major systems.

With respect to the comments made by the Office of the Provincial Auditor, KCC is pleased to report that many of the recommendations have been addressed. Specifically, we advise of the following:

RECOMMENDATIONS THAT HAVE BEEN IMPLEMENTED

- *The communication links in The Pas and Thompson were upgraded to the T1 level of service in April 2001. Special funding was allocated by COPSE to cover the additional costs that KCC must incur for high speed Internet when compared with the costs of providing these same services in the south.*

- *New servers were ordered in July 2001 for WebCT (for distance education delivery), Terminal Server (improves response times for remote users), and to replace some of the desktop machines that were being used as servers. Some of the remaining desktop computers being used as servers will be replaced as funding is allocated, and there are no plans to replace certain desktop machines used for testing and other lower priority services.*

- *The plans to make the Admission form available over the Internet have been replaced by a new Province-wide initiative lead by Campus Manitoba, which is funded in part by COPSE. The purpose of the initiative is to enable students to complete Admission and Registration forms over the Internet. It will begin with distance-delivered courses and will be expanded to include all courses at KCC.*

- *Funding for Satellite downlinks to improve Internet access was provided in the 2001/2002 Budget for three remote sites.*

- *KCC has standardized its desktop office suite software and operating system software by entering into a formal agreement with Microsoft. The agreement covers all computers belonging to the College and allows staff and students to install and use the software on their home computers.*

- *KCC has improved standardization of desktop computer hardware by tendering one annual capital purchase of identical machines. The machines selected must be available from the vendor in the same configuration for at least one year. This practice has now been in place for three years. About 25% to 30% of our desktop computers are replaced annually. This permits the College to provide students and instructors with the most current hardware and application software used in industry for educational programs which are computer-intensive.*

- *All machines assigned to staff using the integrated Management Information System have been replaced with computers that are identically configured.*

- *Formal classroom computer training is now scheduled for staff each May and June. Additional staff training is conducted as required. Self-paced learning software has been acquired and is available to all staff and students. The software covers the Microsoft Office Suite of programs (Word, Excel, PowerPoint, Access, Publisher, FrontPage, and Outlook) and Windows 2000 Professional.*

RECOMMENDATIONS THAT ARE BEING IMPLEMENTED

- *The IT division is preparing a multi-year technology plan. It is to be reviewed annually by KCC Senior Management.*

- *Asset management is performed at two levels of detail. The Finance Division has always assigned an asset tag to all capital equipment, including computers. It also tracks the physical location of assets and verifies location by physical counts. As part of the annual budgeting process, the Information Technology division updates a more detailed computer equipment listing which contains information about workstation components and server hardware and software. At this time, the detailed information is updated manually. If more resources are allocated, this will be automated.*

- *We have examined our Student and Finance Systems and have identified areas for future improvement when human and financial resources are available. We are actively searching for alternative accounts receivable software to meet the unique reporting requirements of third-party student sponsors, CCRA (T2202A tuition receipts), and our Contract Training division.*

- *The College is documenting its procedures for supporting technological infrastructure. Documentation of the procedures followed to install and configure a new workstation is completed. Documentation of other procedures is being done as time permits.*

- *In 1999, the help desk function was established and was tracking help desk performance indicators. Shortly after it began, the project was discontinued because of staffing changes. We recognize the benefits of this information and recently have reinstated the human resources for monitoring the help desk activity.*

- *Security*

  The College has been improving the physical security of computer equipment since 1999. The servers and network equipment at our main campuses and many of our remote sites are secured in locked rooms or wiring closets. Occasionally, this is not possible in remote locations due to constraints placed on the College by the owners of the facilities used.

  The Thompson campus consists of three older wooden three story buildings originally constructed as residences for a local mining company. These buildings were transferred to the College from the Limestone Training and Employment Agency and adapted at minimum cost in 1989 to "temporarily" house the College programs. The buildings are not equipped with a fire suppression system and the main computer room cannot be properly secured without extensive renovations.

In March 2001, the College began monitoring access attempts and logging Internet sites/files accessed from the Thompson campus. This is not yet implemented at The Pas campus. In many of our remote sites, implementation of these security measures is a significant challenge due to slow Internet access and staffing issues.

The College recognizes the need to better segregate the College networks. This is a project we hope to complete in the next fiscal year.

- *Development and Communication of Security Policies and Procedures*

  When students are issued their student ID cards, they receive a copy of the computer usage policy and a brochure orienting them to the College's student computer facilities. The importance of password security is emphasized. The computer usage policy is also physically posted in all computer labs and is on the College's Web site.

  The IT department is implementing a similar process for staff.

- *Written guidelines for establishing the priority of a help desk call are under development.*

- *During annual budget preparation, senior management discusses the basic service expectations and minimum standards expected by administrative staff and instructor requirements for student program delivery. We have noted an increased demand for laptop computers. We agree that senior management should define criteria for requests that exceed the current desktop computer configuration.*

OTHER OBSERVATIONS

- *College Tendering Practice*

  We offer the following clarification with respect to the auditor's comments about one computer purchase that did not follow the usual tendering practice. Shortly before the Auditors visited, the purchasing policy was amended. Beginning with the 2000/2001 fiscal year, capital purchases in excess of $50,000 no longer need Board approval provided that the purchases are pre-approved by the Board of Governors in the College's annual capital equipment budget.

  The transaction mentioned represented a unique situation in that the College identified an unspent allocation of capital funds late in the 1999/2000 fiscal year. Certain capital equipment items that were budgeted for were not purchased. It is normal practice for all budgeted capital equipment to be acquired early in the fiscal year so that students receive the maximum benefit of new or renewed equipment for their programs. The unspent funds became available to be combined with the Information Technology division's upcoming 2000/2001 capital equipment funding allocation. This development permitted the College to purchase a larger number of machines of

identical configuration and achieve economies of scale in terms of purchase price, installation, service, and support.

The terms of the Agreement on Internal Trade (AIT) tendering were fully complied with. Annex 502.4 covers provisions for publicly-funded academic entities. Appendix C, Article (a) of the annex provides an exemption when timely delivery is required. Eighty (80) computers were ordered near the end of June. Delivery was required by the first week of July in order to allow the Information Technology staff adequate time to configure and install all of the units in the student computer labs in multiple geographic locations and transfer the former lab computers elsewhere in the campus or regional sites prior to the return of students to the campus in the last week of August. Delivery time was a critical concern of the IT staff. In the previous year, a large computer order was ordered early and guaranteed for early summer delivery, but the order did not actually arrive until the last week of September, greatly disrupting service to students and staff.

It seems to be the nature of the industry that few computer vendors stock and are able to deliver so many identically configured computers quickly. Pricing and delivery terms were initially requested by telephone. We thought it unnecessary to ask vendors to confirm in writing their pricing terms after they stated that they were unable to meet the tight delivery schedule. The prices of the chosen vendor were competitive.

We believe that KCC's management acted in the best interests of KCC's students, staff, and Manitoba's taxpayers in conducting this transaction and achieving its resulting efficiencies.

A similar process was recently followed. Unused capital grant allocations at the end of the 2000/2001 fiscal year were combined with the allocation of the 2001/2002 fiscal year in order to acquire a larger number of standardized workstations. The same vendor was the successful bidder, and offered the lowest prices of the ten bids received in response to the inter-provincial MERX electronic tendering system.

- *Requisition Approval Process for Computer or Software Purchases by Divisions other than Information Technology.*

  The report discusses three requisition forms worth $28,000 that were processed without the co-signature of the IT Director. Two of these requisitions were for computer equipment or computer software that were completed at the request of the IT director and forwarded on to receive the signature of the authorized budget holder. The third item was for a video projector and did not require approval of the IT Director. While we acknowledge the missing co-signature was an oversight, we disagree with the conclusion that the orders were insufficiently authorized. However, as a final check to ensure all appropriate signatures and co-signatures are documented, the Director of Finance & Administration now reviews all requisitions for capital expenditures.

CONCLUSION

As can be seen, the College has implemented or is in the process of implementing many of the recommendations provided. We are appreciative of having an external objective examination of the College's investment in Information Technology and our policies and procedures in this area. This examination reinforces the choices we have made in laying the foundation for change in Plan 2000.

FOLLOW-UP OF RECOMMENDATIONS MADE IN OUR AUTUMN 1997 REPORT

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Recommendation Follow-up Process

INTRODUCTION

It has long been the tradition of this Office to provide entity management with recommendations to help resolve the issues identified in our reports. We are pleased to note that our recommendations are generally well received. Approximately three years after the completion of our audits, we follow-up with entity management on the progress made in implementing our recommendations.

REVIEW OBJECTIVE

Our objective was to provide information to the Members of the Legislative Assembly on the progress the Government has made in implementing the recommendations included in our Autumn 1997 Value-for-Money audit report.

REVIEW SCOPE AND APPROACH

Our Autumn 1997 report included five chapters. Three of the chapters did not require follow-up at this time. These chapters are:

- Business Planning and Performance Measurement in the Manitoba Government,
- Year 2000, A Challenge for Government Computing, and
- The 1996 Voluntary Separation Incentive Program.

The recommendations in the chapter entitled "Business Planning and Performance Measurement in the Manitoba Government" were followed up by our Governance Practice and reported upon in their July 2000 report entitled *"Business Planning and Performance Measurement: An Assessment of Timeliness of Implementation and Effectiveness of the Process in Departments"*.

The chapter entitled "Year 2000, A Challenge for Government Computing" was a government-wide survey of preparedness. In our Summer 1999 Value-for-Money audit report we included a more detailed audit report of the Province's preparation efforts. This audit further pursued the recommendations generated by our survey findings.

The chapter on the 1996 Voluntary Separation Incentive Program (VSIP) outlined recommendations for future VSIPs. Since a VSIP has not been offered since this date, follow-up is not required.

Accordingly, we followed-up on the progress made in implementing the recommendations included in the following chapters:

- Maintenance Enforcement Program – Department of Justice, and
- Child Day Care Program – Financial Subsidies – Department of Family Services and Housing.

We believe that entity management is in the best position to inform the Legislative Assembly of progress made in dealing with our recommendations. As a result, we have asked management of the two selected entities to prepare brief progress reports on the status of their implementation efforts. We have reproduced these progress reports herein and provide our Review Comments regarding the fairness of the contents of the reports. To ensure management's comments can be clearly distinguished from our own comments, they have been printed in italics.

Overall Status of Our Recommendations

The two reports included in our review contained 25 recommendations. We have summarized the progress the two departments indicate they have made in implementing our recommendations in Figure 1.

Figure 1

Program	Status of Recommendations						
	Total	Implemented	Alternative Solutions Implemented	Significant Progress	Some Progress	No Progress	Recommendation Not Accepted
Maintenance Enforcement Program	18	5	-	-	11	2	-
Child Day Care	7	1	2	3	-	1	-
Total	***25***	***6***	***2***	***3***	***11***	***3***	***-***

We are pleased that eleven of our recommendations have either been implemented or that significant progress has been made. Of particular note is that the Department of Family Services and Housing is well on its way to implementing most of our recommendations.

However, given the extended period of time since our audit, we are concerned that the Department of Justice has only made some progress on eleven recommendations and no progress on two.

Of note, regarding the eleven recommendations for which the Department of Justice reported some progress, is that the solutions involved the redesign and implementation of new processes and automated information systems. We appreciate the magnitude of these projects and the challenges of managing them in an environment of limited and competing resources. In addition, we recognize that the Y2K preparation efforts and the Government's Better Methods Initiative placed a tremendous strain on departmental human resources, and took priority over specific departmental IT initiatives. Such factors can have an adverse impact on planned completion dates for other initiatives. While we are pleased that progress is occurring, we encourage the completion of the IT project within a reasonable timeframe. This would allow the Department and the public to fully benefit from the improved systems and information.

We note that no progress has been made regarding our recommendations to utilize full cost accounting and to improve the quality of program performance information provided to the Legislative Assembly.

Review Comments

We reviewed the progress reports prepared by the following entities:

- Department of Justice
  - Maintenance Enforcement Program
- Department of Family Services and Housing
  - Child Day Care Program – Financial Subsidies

In these reports entity management discuss the progress made in implementing the recommendations included in the Autumn 1997 Value-for-Money audit report. Our review was designed to assess whether the information presented is fairly stated in all significant respects. We carried out the review during February and March of 2001. The review was made in accordance with the standards for assurance engagements established by the Canadian Institute of Chartered Accountants, and accordingly consisted primarily of enquiry, document review and discussion.

We considered the information to be fairly stated if:

- all aspects of the recommendations were discussed;
- all statements of fact were appropriately supported;
- all significant and relevant facts or issues were included in the progress reports; and
- evaluative comments were consistent with the factual statements.

Based on our review, nothing has come to our attention to cause us to believe that the noted progress reports do not present fairly, in all significant respects, the progress made in implementing our recommendations.

It is *important to note* that our review of management progress reports *does not constitute an audit*. The nature and extent of our review procedures are only designed to determine whether management's comments are *plausible*. An audit would require that we conduct more substantive auditing procedures on all aspects of managements' comments. Consequently, we do not express an audit opinion on the information contained in the progress reports.

Department Of Justice - Maintenance Enforcement Program

ABOUT THE PROGRAM

The Program provides a monitoring and enforcement service that is available to all residents of Manitoba who have a maintenance order or agreement from any court in Canada and from other jurisdictions with reciprocal agreements.

AUDIT PURPOSE AND CONCLUSIONS

The purpose of our audit was to answer the following questions:

- Are recipients accurately enrolled in a timely manner?

  We concluded that recipients were accurately enrolled in the program but that the length of time the program took to record an order, once it was received from the courts, could be improved.

- Are accurate account balances maintained?

  We concluded that accurate balances were maintained for most of the orders in our sample. However, we believed there were opportunities to improve processes that ensured the accuracy of account balances, specifically relating to data input, to management review, and to approval of account adjustments.

- Is the enforcement process effectively managed?

  We concluded that there were opportunities to further improve the management and effectiveness of the enforcement process.

- Is program performance adequately measured, evaluated and reported?

  We concluded that management should enhance the measurement, evaluation and reporting of program performance.

- Is sufficient and appropriate performance information on the Maintenance Enforcement Program reported to the Legislative Assembly?

  We concluded that the Legislative Assembly should be better informed about the program and its performance.

STATUS OF RECOMMENDATIONS MADE - THE DEPARTMENT'S PROGRESS REPORT

We recommended that management implement a review and approval process for account adjustments to ensure propriety and accuracy. — **Some Progress**

We recommended that management enhance data input processes to reduce the risk of undetected input errors. — **Some Progress**

Some Progress

We recommended that management address the need to process adjustments to variable order accounts in a more timely manner. This could have included the restructuring of jobs and processes or enhancing technological resources.

As noted in our response to the initial audit report, the Maintenance Enforcement Program (MEP) is in the process of designing, developing, and implementing an enhanced system which will provide for more controls over account adjustments and data entry of both financial and client information to accounts. Financial adjustments to accounts will be made by the accounting section of MEP, not by Designated Officers and will require a second verification before accepting the adjustment to the account record. The verification will occur for specified types of transactions (i.e., high dollar value, complex files, etc.) The number of adjustments precludes a second verification on all transactions. Policies are being developed which will provide rules for how and why accounts may be adjusted. Formulas to adjust the majority of variable accounts will be hardcoded into the system and will allow for staff to input the required data and allow the system to calculate and record the adjustment, including sending out automatic notices to both the recipient and the payor of balance and payment changes. Only the more complex, non-routine variable adjustments will need to be manually calculated.

System development was to start in late 1998 with an initial targeted completion of March 31, 2001. Difficulties in hiring system developers and turnover in the project team have delayed the start-up of the system. In addition, recent departmental re-prioritization of technology projects has resulted in the deferral of this project until sufficient development resources become available. No estimated start-up or completion date is currently available.

Some Progress

We recommended that enforcement officers review all orders in default, on a periodic basis, to determine what enforcement actions are required.

Some Progress

We recommended that management develop a more comprehensive quality assurance file review process and related policies and procedures.

Given that the overall account management is still manual, the Program cannot ensure that all default accounts are being reviewed on a periodic basis. The Program has, however, recently begun a restructuring and there are now two senior officers, each responsible for a team of enforcement officers. Each of the senior officers do periodically review the enforcement officers' caseloads, however, resources limit the number of files that can realistically be reviewed. The Program is preparing a policy which will require the Client Service Managers to review all files that are 90 days in default, all files that have been on the Deputy Registrar's docket (adjourned more than three times), and a sample of files when preparing the annual performance review for each officer. The Program assumes that by reviewing all exception files and the sample review for each officer, approximately 10% of all active files will be sampled in a year.

In addition, the program has done, or is in the process of doing, the following:

1. *Segregating accounts that are deemed uncollectable from the officer caseloads. The uncollectable accounts are reviewed on a regular six month basis by an assigned officer to determine if there is a change in circumstances or information that would move the account into collectable status.*

2. *Segregation of accounts that are "good payor" accounts that can be managed more administratively to allow officers to focus on the enforcement accounts.*

3. *Amalgamation of the Regional MEP offices with the Central MEP office is underway. Previously the Regional MEP offices did not report to the Director of MEP, nor were the Regional officers exclusively assigned to MEP accounts. The offices are now being amalgamated from ten down to three offices, all with full-time MEP officers. Once completed, this will ensure that all MEP accounts are reviewed on the same basis. The amalgamation is expected to be completed in early fiscal 2002/03.*

The system under design will have a case management component which will ensure that all accounts are reviewed on a more current basis. The system will generate officer working lists that will move accounts to varying priorities on the list should certain events or non-events occur. A follow-up report will be provided to the Client Service Managers when an account is not acted on within specified work days, depending upon the event.

We recommended that management implement a policy on the use and timing of alternative enforcement actions. — **Implemented**

We recommended that management complete the development of a policies and procedures manual on a priority basis. — **Some Progress**

Policies and procedures for several MEP processes have been developed and introduced. Development of policies and procedures are now an ongoing practice in MEP as new policies are needed or existing policies need to be updated.

Enforcement guidelines and file maintenance policies have been written, approved by senior management, and issued to staff.

Many of the processes for ensuring adherence to policy are being written into the new system, including enforcement actions and the monitoring of enforcement actions.

We recommended that management review the enforcement action coding system to ensure its completeness, appropriateness, and ease of recording. — **Some Progress**

We recommended that management enhance the Maintenance Enforcement information system by automating all enforcement actions. — **Some Progress**

We recommended that management enhance the activity log update process to facilitate the entry of pertinent information. — **Some Progress**

We recommended that management enhance the Maintenance Enforcement information system to automatically notify officers of variable order income reports that are due. — **Some Progress**

Management had identified these and other information deficiencies in the existing Maintenance Enforcement information system and will be incorporating them into the Maintenance Enforcement Program system redesign. As part of the redesign, the Program will establish an automated overdue reporting notification to the payor and a tracking system for overdue reporting.

Implemented

We recommended that management develop measurable, results-oriented objectives for each program goal.

Some Progress

Upon the development of measurable, results-oriented objectives, we recommended that management design and implement system enhancements that would provide management with meaningful performance information.

No Progress

We recommended that information to the Legislative Assembly include sufficient details about the planned and actual performance levels for key output and outcome measures.

The Maintenance Enforcement Program has been reporting results-oriented objectives through the current Program Profile component of the Estimates process. While some of the measurements are difficult to obtain in the current system, the measurement requirements have been included in the design for the new system. Accounts will have several related codes attached to them which will allow for a more effective management analysis of the types of accounts being enforced. Once the account codes are implemented MEP will determine the appropriate vehicle for conveying the information to the legislature.

No Progress

We recommended that departmental management account for the full costs of the program.

The Department is not positioned to achieve full program costing, however due to organizational changes within the Department, the program has assumed direct responsibility for functions that used to be provided by other programs. This has resulted in a more consolidated costing of program delivery. MEP has absorbed a significant portion of the enforcement files that were previously managed by the Regional Courts appropriation and has also assumed responsibility for the service of garnishment orders, formerly performed by Sheriff services.

Implemented

We recommended that departmental management review the program's accountability framework to assess its impact on program delivery.

As previously noted, the Program is now in the process of restructuring to improve the ability to ensure provincial accountability and to improve client service. A copy of the new organizational structure is attached. To date the program has integrated Brandon, Thompson, The Pas, Flin Flon and Swan River offices into the provincial MEP structure and is currently integrating the Steinbach office. The program plans to complete the amalgamation by the end of fiscal 2002/03.

Implemented

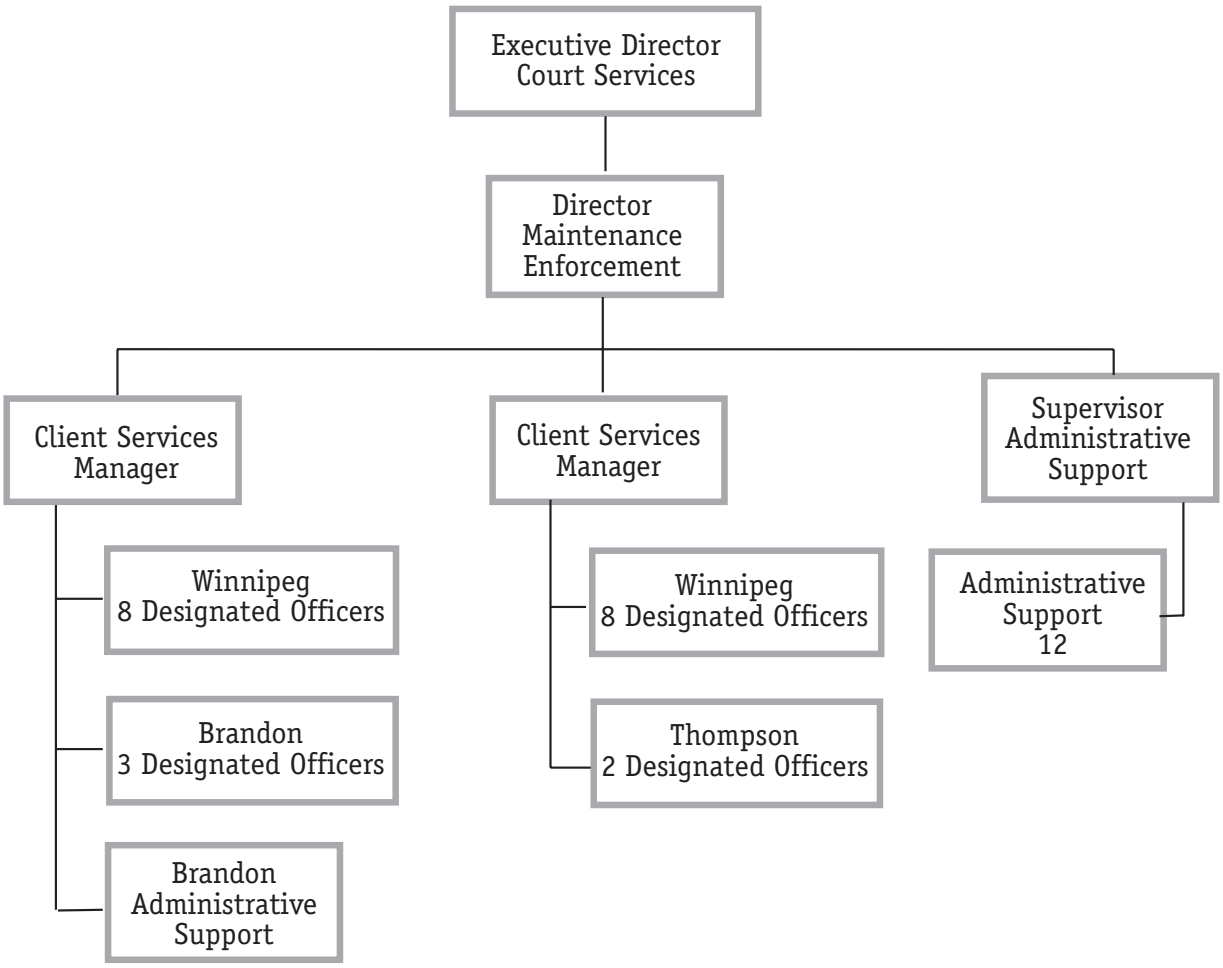
We recommended that management establish a policy regarding the enforcement and management of orders where the payor resides in another jurisdiction.

Implemented

We recommended that the Maintenance Enforcement information system be enhanced to differentiate between the accounts managed by Manitoba and those that are managed by other jurisdictions.

Changes have been made to segregate the reciprocal enforcement accounts from other enforcement accounts. As part of the program policy, Manitoba has taken the position that, if the payor resides in another jurisdiction but Manitoba has the ability to enforce the account locally, then Manitoba will retain control of the account until all possible enforcement options are exhausted. The account would then be transferred to the other jurisdiction for enforcement. In cases when Manitoba is enforcing on behalf of another jurisdiction, Manitoba treats the account with the same priority as any other Manitoba enforcement account.

Maintenance Enforcement Program
July 3, 2001



Department of Family Services and Housing Child Day Care Program – Financial Subsidies

ABOUT THE PROGRAM

Accessible quality day care is an area of concern to many citizens of Manitoba. The Child Day Care Branch of the Department of Family Services addresses these concerns by providing a number of services which include: developing standards for day care facilities, licensing facilities, providing grants to eligible child care providers and providing day care subsidies to children of eligible families.

AUDIT PURPOSE AND CONCLUSIONS

The purpose of our audit was to determine whether:

- Financial subsidy applications were assessed, and subsidy amounts calculated, in a timely manner and in compliance with The Community Child Day Care Standards Act and Regulation.

  We concluded that subsidy eligibility and amounts were assessed in accordance with the Act and Regulation. With respect to timeliness, however, we concluded that subsidy applications were not processed in a timely manner.

- Financial subsidy payments were made on a timely basis and were appropriately supported, calculated, approved and recorded.

  We concluded that subsidy payments were properly calculated and approved, and made on a timely basis. However, we concluded that the Child Day Care Branch should strengthen its processes for ensuring claims are appropriately supported.

- The performance of the financial subsidies component of the Child Day Care Program was appropriately measured.

  We concluded that the Child Day Care Program should strengthen its processes for measuring the performance of the financial subsidies component.

- The Department of Family Services reported sufficient and appropriate performance information on the financial subsidies component of the Child Day Care Program to the Legislative Assembly.

  We concluded that the Legislative Assembly should be better informed about the performance on the financial subsidies component of the Child Day Care Program.

STATUS OF RECOMMENDATIONS MADE - THE DEPARTMENT'S PROGRESS REPORT

Introductory Comments

The Better Systems Initiative is currently involved in building a new computer system for the Child Day Care Program. In 2000/2001 the focus was on the subsidy application process, facility reporting and the management reporting system. To date the following components have been developed and deployed:

- *Subsidy Eligibility Estimator (SEE) which allows parents, service providers and others to determine eligibility and potential financial support for day care;*
- *Online Child Care Subsidy Application which allows individuals to apply for a subsidy either by themselves or through a community partner;*
- *Online Facility Child Attendance Report which allows day care operators to submit attendance reports;*
- *Functionality to calculate the attendance related payment for subsidy;*
- *Functionality to automate calculation of the subsidy benefit;*
- *Submission Manager, which provides the functionality to integrate the subsidy application and the attendance report; and*
- *Operational Reporting and correspondence (e.g., approval letters).*

These components are important in addressing the recommendations in the 1997 Value-For-Money Audit Report.

Implemented

We recommended that the Branch address the need to process applications in a more timely manner. This could have included the restructuring of jobs and processes, enhancing technological resources, or the adoption of alternative subsidy payment options.

A number of changes have been implemented to process applications in a more timely manner. In 1997/98, a new simplified subsidy application form was introduced and included the reduction of documents needed to complete the application. Most recently, the new subsidy application system announced by the Minister of Family Services and Housing on April 26, 2001 now enables families to apply for subsidy online. The system is intended to improve service delivery to all Child Day Care stakeholders, and provide self-screening and self-service options for Manitoba citizens using Child Day Care.

Significant Progress

We recommended that the Branch develop a policy regarding the referral of applications to the investigation unit.

The Department has improved the integration of investigations with the Branch. An investigator has recently been re-assigned to work out of the Child Day Care Program, reporting to the Assistant Director. The investigator will also receive support as required from the Supervisor of the Employment and Income Assistance Investigation Unit.

Initially, the investigator will review the subsidy files where irregularities have been detected. Once this individual becomes more familiar with the Child Day Care Regulations, he will be involved in the development of a policy regarding the referral of applications for investigation.

We recommended that the Branch perform quality assurance file reviews on a representative sample of applications and that it develop file review policies and procedures.

Alternative Solution Implemented

The new information technology system allows assessments to be viewed from start to finish online, and will not allow applications to be processed without all necessary information. In the Department's view, this newly automated process is more effective in ensuring quality than the manual review of a representative sample. The system contains all relevant application information, including case notes. Some workflow tools have also been built into the system to allow the Supervisor to review the rate at which applications are processed.

We recommended that the Branch establish a process of periodically reconciling subsidy payment reports to facility attendance reports.

Alternative Solution Implemented

The new information technology system improves the ability of the Branch to reconcile subsidy payments to facility attendance reports. The system will only process payments for subsidies approved on the system for a particular child. The risk of paying the wrong centre for a particular child is low because the system will produce an exception report for all children claimed that do not have a matching approval.

In addition, Day Care Coordinators spot-check the daily attendance records against children in attendance at the time of an annual re-licensing inspection. The Child Day Care Director also has authority under the Act to seize facility records and conduct an audit where specific concerns are identified.

We recommended that the Department develop measurable results-oriented program objectives and related program performance measures.

Significant Progress

We also recommended that the information system be amended to accommodate the related information needs.

Significant Progress

Outcome measures are being developed for program areas throughout the Department of Family Services and Housing. Child Day Care continues to refine program objectives and performance measures. The new information technology system has significantly increased the ability of the subsidy area to track and report on activities, outputs and outcomes. This ability will be enhanced in future phases of the system.

We recommended that information to the Legislative Assembly include sufficient details about the planned and actual performance levels for key output and outcome measures.

No Progress

The Department of Family Services and Housing has been working proactively to develop key output and outcome measures. The new information technology system will support improved outcome measures for Child Day Care. Results will be included in the appropriate reports as the measures are fully implemented.