

Year 2000 / Information Technology Preparedness

The Year 2000 problem is caused by the way dates are recorded and computed. Many computer systems use a two-digit date field to represent the year, such as “98” for 1998. This format does not distinguish between 2000 and 1900. Computer programs that are not corrected to accommodate years after 1999 could process information incorrectly or fail to operate.

This problem affects a wide range of information systems, including systems that process payments and revenue collection as well as those that support health and safety services. It is also inherent in embedded systems. An embedded system is a device used to control, monitor or assist the operation of equipment. Many embedded systems, for example, medical devices, have clocks built into computer chips and if the computer clock is not Year 2000 compliant, the entire chip or piece of equipment may have to be replaced.

The Corporate Year 2000 Project Management Office, established by Management Board Secretariat (MBS) in 1997, is responsible for coordinating ministry efforts, monitoring progress, managing resource issues and reporting on overall progress to Management Board of Cabinet (MBC). It also regularly provides status reports to steering committees that comprise a cross section of deputy ministers and assistant deputy ministers. Each ministry is responsible for its Year 2000 readiness.

In December 1997, based on information submitted by ministries, MBC approved 63 mission critical projects to remedy computer systems that support critical ministry services and operations. The computer programs in these systems have to be converted to handle years after 1999, and the converted programs have to be thoroughly tested before implementation. These 63 projects were given first priority in the government’s overall Year 2000 compliance efforts. MBC set December 31, 1998 as the target date for conversion of all mission critical systems. The target date for completing the testing and implementation of these revised systems was June 30, 1999.

Some of the systems included in the mission critical projects are:

- The computerized ambulance response system which supports ambulance dispatch.
- The Ontario Municipal and Provincial Police Automation Cooperative System that is used by many municipal police forces and the Ontario Provincial Police to report incidents, dispatch calls and access information from a central database.
- The social assistance income benefits systems that process income support payments amounting to over \$400 million per month.

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- The vital events registration system which is used to issue documents such as birth certificates that are needed for Ontario Health Insurance Plan coverage and social assistance benefits.
 - The maintenance enforcement computerized accounting system used to process family and custody support payments.
 - The tax collection systems that process revenue amounting to hundreds of millions of dollars monthly.
 - The government-wide data communication network.

In early 1998, we reviewed the status of the government's remedial efforts with a focus on mission critical projects. In our Special Report to the Legislative Assembly, *Year 2000: The Millennium Bug* (June 1998), we concluded that, as of March 31, 1998, the government needed to significantly pick up the pace of its Year 2000 compliance effort. We reported that much remained to be done in order to meet the MBC target date for system conversion. Other recommendations included:

- demonstrating senior management support and commitment;
- preparing detailed project plans;
- commencing work on examining and replacing embedded systems;
- taking measures to ensure sufficient staff with the necessary skills;
- implementing a quality assurance process;
- developing detailed test plans; and
- developing contingency plans.

In the six months leading to March 31, 1999, ministries identified 243 business critical projects to fix computer programs, embedded systems and infrastructure that directly support mission critical projects (Tier I), core businesses (Tier II) or internal operations (Tier III). The target completion date for the 180 projects in Tier I and most Tier II projects was June 30, 1999. Completion of these projects is particularly important as the failure of a Tier I or Tier II system can result in degradation of vital services or interruption of key businesses. Tier III projects were targeted for completion by September 30, 1999.

Some systems included in business critical projects are:

- The process control systems used by the Ontario Clean Water Agency in treatment plants.
- The food safety support system that maintains information about the safety of food products sold in Ontario.
- Systems used by the Ontario Financing Authority to manage currency and other financial risks on behalf of the Province.
- The liquor licensing system used to manage the registration of establishments that serve liquor.
- The asbestos registry system that maintains information on Ontario workers who are exposed to asbestos.

The government recognizes that the Year 2000 problem is a major business risk and that the conversion and testing of all affected systems and infrastructure is an enormous task. To address the possibility that the Year 2000 risk will not be contained by full implementation of revised systems and corrected equipment, MBC directed ministries to prepare contingency plans by June 30, 1999, to minimize the disruption of key government services caused by the millennium bug.

MBS also issued guidelines to ministries to assist in developing plans for addressing the Year 2000 risks in key parts of the broader public sector. Some examples of institutions in the broader public sector are:

- public hospitals;
- school boards;
- Children's Aid Societies;
- Liquor Control Board of Ontario;
- Ontario Lottery Corporation; and
- non-profit housing providers.

The cost of Year 2000 compliance for Ontario government ministries is estimated to range from \$350 million to \$400 million. In addition, the government has allocated \$324 million to hospitals, \$32 million to other health sector organizations and \$89 million to key parts of the broader public sector for system remedy and equipment replacement.

REVIEW OBJECTIVE AND SCOPE

Our objective was to review the status of the government's Year 2000 efforts and the project management processes the government has put in place to ensure that:

- the necessary remedies to achieve Year 2000 readiness are identified, tested and implemented; and
- contingency plans are developed to minimize disruption of government services and administration.

The scope of our review included following up on recommendations made in our June 1998 report, determining the status of mission critical and business critical projects and contingency plans, and assessing the government's procedures for supporting and monitoring the progress in key parts of the broader public sector.

We visited the Corporate Project Management Office and seven large ministries to review project documentation. We also discussed project information and progress with other ministries. Most of our review was carried out in March 1999. As such, the information presented in this report is based on the status of the government's progress as of March 31, 1999.

We had discussions with representatives of a number of large private and quasi-private corporations to obtain information about their Year 2000 project progress. We also conducted

extensive research on best practices. In addition, we engaged the services of three private sector consultants with expertise in Year 2000 project management practices to provide input during the key stages of our review.

Most ministry internal audit branches had done very limited reviews of Year 2000 projects. We reviewed and relied on their work where relevant.

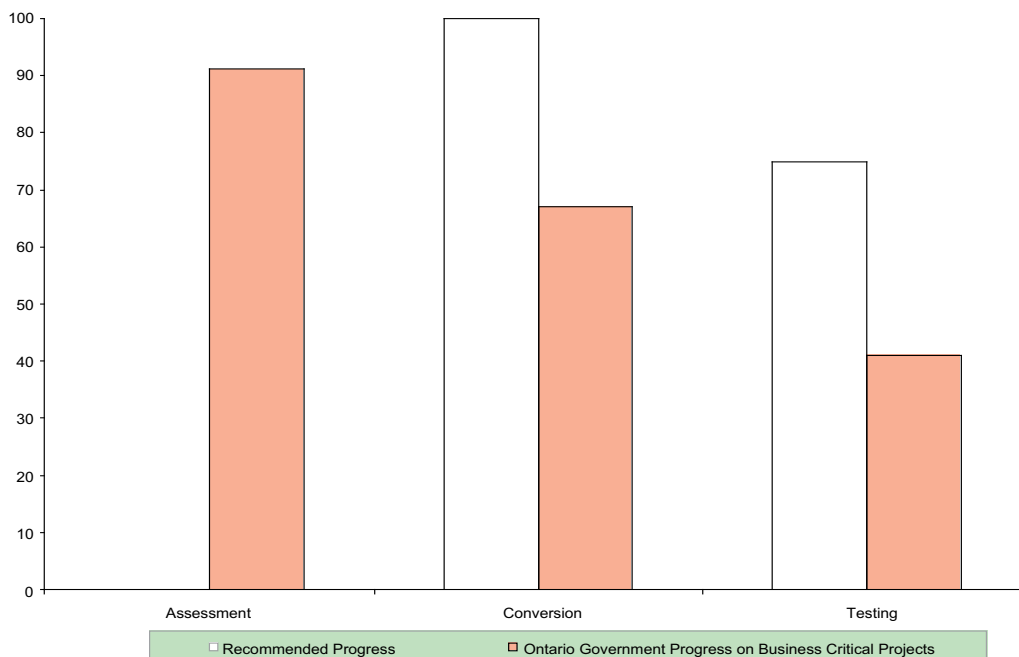
OVERALL REVIEW OBSERVATIONS

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Significant progress had been made since our last review a year ago. However, we believe that the government still needs to significantly accelerate its Year 2000 compliance effort in a number of key areas. Closer attention and monitoring by ministry management and MBS are required to ensure that the necessary resources are devoted to mission critical and business critical projects. The government recognized that, as of March 31, 1999, seven mission critical projects and 49 business critical projects needed to be accelerated.

We compared the government's status with the progress that Year 2000 experts recommend be achieved as of March 31, 1999 for large public and private sector organizations. To illustrate this comparison, the following chart contrasts the government's cumulative progress on mission critical projects and business critical projects with the average of the rates of progress for key project phases recommended by sources such as The Industry Task Force on Year 2000 established by the federal Minister of Industry and the United States General Accounting Office.

**Recommended Rate of Progress for Large Organizations
vs.
Progress of Ontario Government
March 31, 1999**



The above comparison indicates that the government needs to accelerate its rate of progress.

To mitigate the risk of system failures, MBS directed ministries to develop contingency plans, following a common methodology, for key processes prior to June 30, 1999. As at March 31, 1999, only three ministries had made substantial progress toward completing contingency plans. Ministry senior management and MBS need to closely monitor the progress toward developing contingency measures and ensure that sufficient skilled resources are available.

We are also concerned about the progress of public hospitals. Thirty percent of these hospitals had not responded to a Year 2000 readiness survey conducted by the Ministry of Health, and 21 of the hospitals that had responded did not expect that their computer systems and medical devices would be ready by December 31, 1999. The Ministry should work with public hospitals to accelerate the progress of their Year 2000 compliance efforts.

IMPLEMENTED YEAR 2000 PRACTICES

Based on our research on best practices and our review of the government's project management process, we noted a number of sound practices that the government had implemented including several that reflect our earlier recommendations. Some of them are:

- Mission critical projects were identified and given first priority in the overall Year 2000 compliance efforts.
- Each ministry has assigned an assistant deputy minister to lead its Year 2000 projects.
- MBS and ministry senior executives have directed their staff members to give top priority to Year 2000 projects.
- Year 2000 project success is included in each ministry's business plan and the government's information technology strategy.
- Each ministry is submitting a monthly progress report to the Corporate Project Management Office.
- MBS has emphasized to ministries the importance of testing and provided guidance and funding to train staff.
- The Corporate Project Management Office coordinates the funding process to minimize the time required for preparing and reviewing requisitions.
- MBS has implemented an incentive compensation program for critical staff members who are dedicated to Year 2000 projects.
- MBS is working with ministries to implement a quality assurance program.

DETAILED REVIEW OBSERVATIONS

In mid-summer of 1999, we provided to the Corporate Project Management Office the above overall review observations as well as our detailed observations and recommendations on the following matters:

- mission critical projects;
- business critical projects;

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- contingency planning;
 - readiness of public hospitals;
 - Ontario Realty Corporation;
 - system certification; and
 - project plans.

In August 1999, we received progress and action-oriented responses to our recommendations.

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Overall Government Response

The government's priority through Management Board Secretariat has been to focus resources based on criticality and risk. Mission critical projects were given first priority, followed by business critical projects. Each project's progress is assessed monthly and is reported to Management Board of Cabinet using confidence ratings. Where acceleration is needed, Management Board of Cabinet requires the ministry to develop a specific detailed action plan to accelerate the projects.

To address the need for contingency planning, the government adopted a formal business continuity planning methodology. As of May 31, 1999, all ministries had started the business continuity planning process and had completed, or were in the process of completing, risk assessments, business impact analyses, and recovery strategies and procedures.

The Health Sector Year 2000 Project Office's mandate is to monitor and to facilitate the broader public health sector's progress toward Year 2000 readiness. A risk assessment focusing on overall Year 2000 readiness pertaining to remediation and contingency planning is being undertaken by the Health Sector Year 2000 Project Office which will continue to advise the hospitals of the urgency with which they need to take immediate and comprehensive action to ensure Year 2000 readiness.