Auditor General
MANITOBA

Report to the Legislative Assembly

Aging Information Systems

Independent Audit Report

Website Version

February 2022

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Auditor General
MANITOBA

February 2022

Honourable Myrna Driedger
Speaker of the Legislative Assembly
Room 244, Legislative Building
450 Broadway
Winnipeg, Manitoba R3C 0V8

Dear Madam Speaker:

It is an honour to submit my report, titled *Aging Information Systems*, to be laid before Members of the Legislative Assembly in accordance with the provisions of Section 28 of *The Auditor General Act*.

Respectfully submitted,

Original Signed by:
Tyson Shtykalo

Tyson Shtykalo, CPA, CA
Auditor General

Office: 204. 945.3790 | 500-330 Portage Avenue | Winnipeg, Manitoba R3C 0C4 | oag.mb.ca

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Auditor General's comments

The Province of Manitoba relies on information systems to deliver a wide-range of services that Manitobans depend on, including online registrations, program applications, and fee payments.

Information systems include hardware such as servers, firewalls, switches, and routers, as well as the software that runs on these devices. As these information systems age, they become more susceptible to risks, including extended system outages, decreased system reliability, and increased security vulnerabilities. Aging systems may also be unable to keep up with the evolving needs and expectations of Manitobans. It's important that the age and suitability of information systems be monitored to make sure they are replaced or upgraded when needed.

Aging information systems are still widely used by the Province. I'm concerned with the limited factors used to determine the risks of continued use of these systems. Without considering more extensive risk factors, some of the current risk ratings could be either under or over-stated resulting in inadequate actions to reduce the risk to an acceptable level.

We noted there is no centralized monitoring of aging systems risk assessment results. This is a missed opportunity to identify causes of risk across all departments, and enable the Province to take a system-wide approach to risk mitigation.

We also found limited involvement from the departments in assessing the risks of the systems they use, and in verifying the accuracy of systems inventory. Since the departments are responsible for creating action plans to address risks, it is important that departmental stakeholders are involved in the risk assessment process. A lack of departmental involvement can lead to inappropriate action plans, and incorrect risk ratings.

I would like to thank Business Transformation and Technology and departmental management and staff we worked with, for their cooperation and assistance. I would also like to thank my audit team for their dedication and hard work.

Original Signed by:
Tyson Shtykalo

Tyson Shtykalo, CPA, CA
Auditor General

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Report highlights

Why we did this audit

- The Province of Manitoba (the Province) relies on information systems to help deliver a wide-range of services, including online registrations, provincial program applications, and fee payments.
- Aging information systems expose the Province to extended system outages, decreased system reliability, and security vulnerabilities.

Objective

To determine if the risks associated with the Province's aging information systems are identified and managed to reduce the probability of adverse impacts to system users and services delivered to Manitobans.

Conclusion

The risks associated with the Province's aging information systems are not identified and managed to reduce the probability of adverse impacts to system users and services delivered to Manitobans.

Our report includes 8 RECOMMENDATIONS.

What we found

ASSET IDENTIFICATION

The Province's inventory of information systems which is used in assessing aging system risks is incomplete and inaccurate.

ASSESSING AND REPORTING AGING SYSTEMS RISKS

The process to analyze and report aging systems risks is inadequate.

- The Information and Communication Technology (ICT) Standards, used as the basis for risk ratings, are not kept up to date.
- The age of supporting technologies and number of application support resources available are the only factors considered in determining aging systems risks.
- The risk remaining after considering controls and other mitigating factors (residual risk) is not considered in final risk rating.
- Results are not accurately presented due to risk rating errors for business applications and supporting technologies.
- Department stakeholders are not involved in determining final risk ratings.

CENTRAL MONITORING OF RISKS AND ACTIONS

There is a lack of practices in place to monitor aging systems risk ratings, and corresponding risk responses are not well-defined.

- There is no combined report of risk ratings and responses across all departments.
- IT Asset Condition Reports have limited distribution to stakeholder and lack sufficient risk information.
- IT Asset Condition Reports are not released in a timely manner.

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Background

The Province of Manitoba (the Province) relies on **information systems** to help deliver a wide-range of services to its citizens. This includes online registrations, applications to provincial programs, and payment processing for different services such as education, healthcare, and social services. As new information systems enhance the customer experience in the private sector, citizens expect a similar level of service in the public sector—often outside of regular business hours.

For governments, adopting new or modernizing aging information systems helps create more efficient processes and allows more flexibility in meeting the needs of system users. Adopting new or modernizing aging information systems may also lead to reduced operating costs, as aging information systems face the risk of higher costs to operate due to more maintenance requirements.

An **information system** refers to a collection of multiple components, such as hardware and software, involved in the collection, processing, storage, and dissemination of information.

A **patch** is a repair to a vulnerability or a flaw that is identified after the release of an application or software.

A **database** is an organized collection of structured information, or data, typically stored electronically in a computer system.

An **operating system** is a program that acts as an interface between the system hardware and the user. Examples are Microsoft Windows, macOS, and Linux.

In addition, aging information systems expose the Province to risks such as extended system outages that prevent service delivery, decreased system reliability, and unnecessary security vulnerabilities as older systems may no longer be supported or **patched**.

These information systems can be classified as either business applications or shared network infrastructure. Business applications are systems used by departments for internal operations and delivery of services to citizens. These include the supporting technologies which are comprised of **databases**, **operating systems** and programming languages. Shared network infrastructure are assets that are not necessarily attributable to a specific department, but rather used to support services across all or multiple departments. These include devices such as, but not limited to, firewalls, switches, routers, and servers.

The Department of Labour, Consumer Protection and Government Services' Business Transformation and Technology (BTT) branch is responsible for annually assessing the technological health of every department's business application system and supporting technologies.

Supporting technologies are recorded in BTT's IT Application Portfolio Management system. This system was developed internally by BTT to catalogue IT assets and their corresponding

supporting technologies. In addition, the number of application support resources is also recorded in this system as it is also a risk factor considered in the overall technical risk rating of business applications.

BTT evaluates and rates each supporting technology based on where it sits in the technology lifecycle of the Province's Information and Communication Technology (ICT) Standards. Each supporting technology is given a risk rating of Low (Green), Medium (Yellow), or High (Red) based on its stage in the lifecycle. The following table summarizes the risk rating used for each stage of the lifecycle (Green, Yellow, and Red) and the number of application support resources:

Risk rating / designated colour	Stage in the lifecycle	Application support resource(s)
Low / Green	Baseline	Vendor; BTT (>2 person)
Medium / Yellow	Containment	BTT (2 person)
High / Red	Retirement	BTT (1 or 0 person)

The stages of the lifecycle are defined in the ICT Standard as follows:

- **Baseline** – includes technologies and processes that are currently in use by the Province of Manitoba and are endorsed by the ICT Standard. These technologies reached an acceptable level of maturity and are deemed to provide good value to the Government.
- **Containment** – includes technologies and processes that should only be targeted for limited investment (for example, maintenance) or are necessary to meet specific service delivery needs for the Province that are not achievable using baseline elements. It also indicates a stage where new development should be limited.
- **Retirement** – includes technologies and processes that the Province has targeted for retirement from production and should not be used in current or future development. These are technologies that have reached the end of their lifecycle.

After rating each supporting technology, the IT Application Portfolio Management system calculates the overall technical risk rating for each business application by determining the highest-rated risk factor. For example, if all the supporting technologies and the application support are green, the final rating will be green. But if even just one of the risk factors is rated as yellow or red, the final rating will become yellow or red as well. As such, it is necessary that the ICT Standards are updated to reflect the rapid evolution of technologies. Some technologies that were deemed to be baseline in prior years may need to be adjusted or updated today to other stages of the technology lifecycle.

After rating each business application, BTT produces IT Asset Condition Reports which are sent to individual departments. These are point-in-time assessments that help departments determine the technical risks associated with the information systems they own, and provides information to be

considered as part of each department's IT demand planning. Based on the department's risk tolerance, BTT recommends that responses be developed which could include the retirement, upgrade, or replacement of a system. BTT also recommends that department's review their Business Continuity or IT Disaster Recovery plans to ensure these plans are in place for their critical services. The technical risk definitions are summarized in the table below together with BTT's recommended action for each technical risk rating.

Category	Risk rating description	Recommended actions
Green Level 1 (Low)	The supporting technologies that comprise this business application system can be managed by BTT and/or third-party vendors.	All systems, on occasion, experience unexpected outages. It is recommended you review your Business Continuity and Disaster Recovery plans to ensure they are current and reflect your risk tolerance.
Yellow Level 2 (Medium)	One or more of the supporting technologies that comprise this business application are currently at risk of experiencing a prolonged outage or may experience an irreparable failure in the near future.	If this system is important to your business, your department should consider an upgrade or replacement. Additional investment in this system is not advised, unless it is for the specific purpose of enhancing the system's technical reliability. **It is recommended** that your department: • Prepare a risk assessment, and IT Business Case. • Review and test your Business Continuity plans. • Contact BTT to request a Quick Estimate for upgrading/replacement, and include this in your department's IT Investment and Demand Plan.
Red Level 3 (High)	One or more of the supporting technologies that comprise this business application are currently at risk of experiencing a prolonged service outage or an irreparable failure. As a result, this system may unexpectedly stop working, and BTT may not be able to restore service; support is on a best effort basis only. Cybersecurity patches and/or bug fixes and/or updates may not be available. If a cybersecurity threat occurs, these business applications may be taken offline without warning to protect the Manitoba government's data and computing environment.	If this system is important to your business, it is strongly recommended that your department upgrade or replace the system. Additional investment in this system is not advised, unless it is for the specific purpose of enhancing the system's technical reliability. **It is strongly recommended** that your department: • Prepare a risk assessment, and IT Business Case. • Immediately contact BTT to request a Quick Estimate for upgrading/replacement, and include this in your department's IT Investment and Demand Plan. • Review and test your Business Continuity plans.

BTT oversees Kyndryl's (formerly part of IBM) management of the Province's shared network infrastructure. As the shared network infrastructure does not necessarily belong to a specific department, the risk rating for these information systems are not covered in IT Asset Condition Reports. Instead, Kyndryl provides BTT with a monthly End-of-Life report which includes all assets managed by Kyndryl and corresponding end-of-service or end-of-support dates. BTT uses this information to determine which assets are due for replacement or upgrade, similar to how BTT uses the ICT Standards in determining the technical risk rating of business applications in the IT Asset Condition Report.

Audit objective

The objective of the audit was to determine if the risks associated with the Province's aging information systems are identified and managed to reduce the probability of adverse impacts to system users and services delivered to Manitobans.

Scope and approach

The audit included the inspection of documents, procedures, standards, reports, and other documentation relevant to the Province's aging information systems risk analysis processes. We interviewed key process owners and stakeholders within Business Transformation and Technology (BTT) to understand the processes and activities in place to analyze and assess risks of continued use of aging information systems. We noted that different processes are used to analyze risk for business applications and shared network infrastructure asset types.

For business applications, we inspected the IT Asset Condition Reports for a sample of departments and interviewed departmental stakeholders such as the Executive Finance Officers and IT representatives. The sample departments were:

- Agriculture
- Families
- Justice
- Labour, Consumer Protection and Government Services
- Transportation and Infrastructure

We reviewed these reports to understand how they are used in developing action items that address aging systems risks. This audit did not review the annual IT demand planning process which the IT Asset Condition Report feeds into.

We obtained reports used by BTT in assessing the age of shared network infrastructure and interviewed internal BTT personnel to understand the activities performed in utilizing such reports in the risk analysis. Just like for business applications, we did not review the funding process that replaces or upgrades the shared network infrastructure.

Audit criteria

We used the following criteria in performing this audit:

	Audit criteria	Source
1	All systems should be identified to evaluate risks related to aging systems.	COBIT5 BAI09.01, BAI09.02; NIST Cybersecurity Framework 1.1 – Asset Management (ID.AM)
2	The Province should have a process to identify, analyze and report aging system risks.	COBIT5 APO12.01, APO12.02, APO12.05; NIST Cybersecurity Framework 1.1. – Risk Assessment (ID.RA)
3	The Province should have practices to review and assess the results of the aging systems' risk analysis and take actions to mitigate the risks to an acceptable level.	COBIT5 APO12.04, BAI04.02; NIST Cybersecurity Framework 1.1. – Risk Management Strategy (ID.RM)

Province not adequately identifying and managing risks associated with aging information systems

The Province of Manitoba (the Province) has a process in place to rate the technical risk of business applications and to identify the shared network infrastructure that needs to be replaced or upgraded. However, we concluded that the Province does not manage aging information systems risks to reduce the probability of adverse impacts to system users and services delivered to Manitobans, based on the following findings:

- The inventory of information systems used in aging system risk assessments is incomplete and inaccurate (SECTION 1).
- The process used to analyze and report aging systems risks are inadequate (SECTION 2).
- There is a lack of practices to monitor aging systems risk ratings and response (SECTION 3).

1 Incomplete and inaccurate inventory of information systems used to assess aging system risks

The first step in assessing the risks of aging information systems is to identify all information system assets. It is only once all systems that need to be protected are identified, can threats be determined, and applicable defenses and actions be put in place. In addition, identifying assets establishes ownership and accountability in responding to the risks.

Business Transformation and Technology (BTT) is responsible for identifying and collecting information about the Province's business applications. BTT records the supporting technologies and number of application support resources in the IT Application Portfolio Management system. The final risk ratings determined in this system are then reported to the departments through the IT Asset Condition Report.

For the shared network infrastructure assets, Kyndryl provides BTT with an End-of-Life report on a monthly basis. This report includes all assets managed by Kyndryl and their corresponding end-of-service or end-of-support date which is used by BTT to identify shared network infrastructure assets that need replacement.

We found that BTT had an incomplete and inaccurate inventory of information systems used to assess aging systems risk.

1.1 Incomplete and inaccurate inventory of applications and supporting technologies

We reviewed an extract of the risk ratings for supporting technologies and application support resources across all departments as of March 2021. We noted that 209 business applications have unidentified supporting technology as they are marked either as "n/a," "unknown" or as other technologies not reflected in the ICT Standards (this is the total of the grey bars for programming language, database and operating system in FIGURE 2). These instances where the supporting technologies have not been identified could mean that the overall risk rating for these business applications is incorrect, as one of the factors contributing to the final risk rating has not been identified.

We also inspected the March 2020 IT Asset Condition Reports of 5 sample departments. We expected the reports to reflect a complete and accurate inventory of business applications the departments own. Through discussions with the respective department representatives (including the Executive Finance Officers and IT branch Directors), we found instances where the final reports showed an inaccurate inventory of the business applications they own. We noted that there are no review procedures between BTT and the departments that will verify the completeness and accuracy of information systems before the final reports are issued. It is important that the inventory of business applications is complete so departments are aware of risks related to all their applications, and so they can create the necessary and appropriate action plans that are relevant to their needs.

We noted the following errors in the IT Asset Condition Reports for all departments sampled:

Agriculture

- 4 of 40 applications had been retired but were still included in their IT Asset Condition Report.

Families

- 1 application has been retired but is still included in their IT Asset Condition Report.
- 4 of 56 applications had been transferred to other departments but were still included in their IT Asset Condition Report.
- 14 applications owned by the department were not listed in their IT Asset Condition Report.

Justice

- 2 applications had been transferred from other departments but were not included in their IT Asset Condition Report.

Labour, Consumer Protection and Government Services

- 1 application is not included in the asset listing.

Transportation and Infrastructure

- 8 of 41 applications included in the IT Asset Condition Report were no longer owned by the department.
- 2 of 41 applications had already been replaced but are still included in their IT Asset Condition Report.
- 15 applications owned by the department were not listed in their IT Asset Condition Report.

The IT Asset Condition Reports are intended to provide a point-in-time technical risk rating to the departments. This means some systems may change ownership from the time BTT starts working on the report until the report is completed and sent to departments. Also, since the IT Asset Condition Reports only include systems supported by BTT, there may be other systems excluded from a complete assessment of aging systems risk. These inaccuracies can be mitigated or prevented if there is a collaborative review process to confirm the accuracy of the asset inventory between BTT and the department prior to finalization and issuing the report.

Recommendation 1

We recommend that BTT implement measures to completely and accurately identify and record supporting technologies and business applications in the IT Application Portfolio Management system and IT Asset Condition Reports.

2 Inadequate process used to analyze and report aging systems risks

An effective risk management process allows stakeholders to assess the impact and probability of an adverse event occurring. The assessment should be done using quantitative factors where data or metrics exist and qualitative factors where data is not available. A risk management process should also include risk mitigation steps where residual risk is determined and when necessary, additional mitigation measures are applied such as risk avoidance, acceptance, transfer or reduction.

The current risk rating process showed that 339 out of 411 business applications (82%) are high risk (red) as of March 2021, as shown in FIGURE 1.

These overall ratings are based on the rating of each business application's risk factors which include the supporting technologies and the application support resources as shown in FIGURE 2.

Figure 1 – Distribution of technology risk rating for business applications across all departments at March 2021

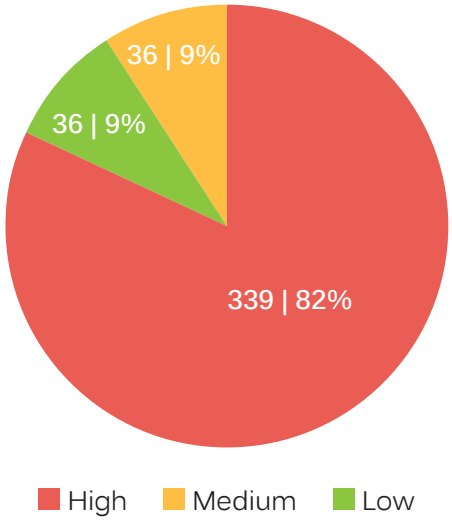
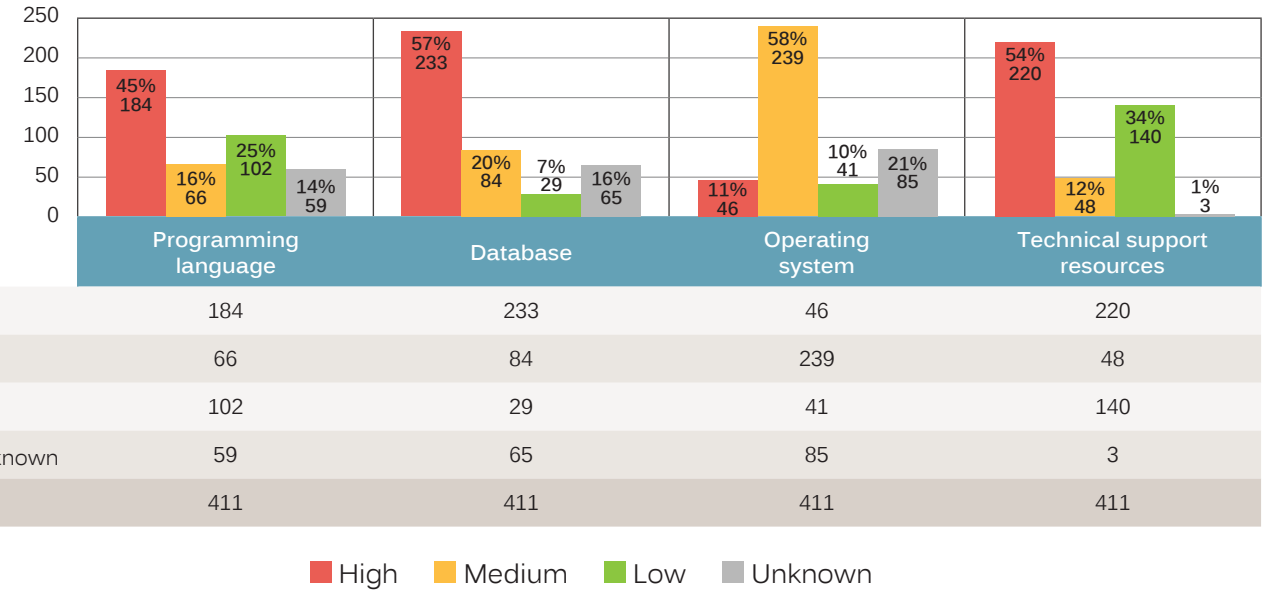


Figure 2 – Summary of risk rating per risk factor (supporting technologies and technical support resource) for all departments at March 2021



	Programming language	Database	Operating system	Technical support resources
H	184	233	46	220
M	66	84	239	48
L	102	29	41	140
Unknown	59	65	85	3
Total	411	411	411	411

These ratings indicate that a significant number of business applications and their supporting technologies are old and, according to BTT's recommendations, should be replaced. As seen in **FIGURE 2**, 57% of databases and 45% of the application's programming language are rated as high risk. In addition, 54% of business applications need additional support personnel as they are limited to one or none.

Based on the current risk rating results, the Province has a significant number of aging information systems. This increases the risk exposure associated with continued use of aging information systems such as extended outages, decreased system reliability and exposure to security vulnerabilities. However, we found the process to determine and report the risk of continued use of aging information systems for both business applications and shared network infrastructure asset types to be inadequate. As such, some of the current risk ratings could be misstated (either under or over-stated). We based this conclusion on the following findings:

- Information and Communication Technologies Standards used as the basis of rating the systems have not been updated **(SECTION 2.1)**.
- The risk factors considered in the current aging systems' risk assessment process are limited to how current the versions of each supporting technology are, and how many application support resources are available **(SECTION 2.2)**.
- Residual risk is not determined **(SECTION 2.3)**.
- The departments are not involved in risk rating their business applications **(SECTION 2.4)**.
- There were inaccurate ratings given for supporting technologies in the IT Application Portfolio Management system and inaccurate presentation of information in the IT Asset Condition Report **(SECTION 2.5)**.

2.1 ICT Standards are not kept up to date

The ICT Standards, which are the basis of the ratings for each supporting technology, were last updated in April 2019. Since the technical risk rating is based on how current the technologies are per the ICT Standards, this document has to be updated regularly. If the assessment of supporting technologies is based on non-current ICT Standards, a technology may be assessed as baseline and given a green status when it should already be considered as old and therefore rated as medium (yellow) risk or high (red) risk.

ICT Standards determine the stage of an information system in the technology lifecycle. Therefore, we expected that all supporting technologies recorded in the IT Application Portfolio Management system are reflected in the ICT Standards. However, we found instances where the supporting technology recorded in the IT Application Portfolio Management system is not listed in the ICT Standards. This implies that the ICT Standards are incomplete and need updating to reflect the current technology environment of all departments.

Recommendation 2

We recommend that:

a. The ICT Standards be updated to reflect all supporting technologies currently in use.
b. A process be put in place to regularly update the Information and Communications Technology Standards in order keep pace with the changes in technology.

2.2 Limited risk factors considered

We found that the risk factors used to determine the final technical risk rating of business applications are limited to the age of supporting technology and how many application support resources are available. We observed that only end-of-life information provided by the vendor is used to assess the risks associated with aging shared network infrastructure.

Qualitative and quantitative considerations such as the following are not considered in the overall risk rating:

- Quantitative or measurable criteria where data can be used to objectively calculate or determine risk, such as:
  - History of system downtime.
  - Number of incidents recorded.
  - Key performance indicators.
  - Remaining useful life of the asset.
  - Cost to operate.

- Qualitative criteria where more subjective analysis of risk occurs, such as:
  - System reliability.
  - Ability to meet needs of the department.
  - Probability of the risk occurring.
  - Potential impact if the risk actually occurs.

Because the current risk factors are limited, it could result in inaccurate risk ratings, which could cause the current ratings for the business applications to be misstated. The limited risk factors also do not allow stakeholders such as BTT or the departments to see a complete view of the aging information system risks affecting the business applications.

2.3 Residual risk is not determined

One of the good practices in risk assessment is identifying controls and other mitigating factors that could reduce threats to more acceptable levels. This is known as residual risk. These mitigating factors could be the existing business process controls and activities, or it could also be projects undertaken by BTT or the departments to address the risk.

Currently, there is no mechanism to record remediation actions and remediation status. The IT Asset Condition Report also explicitly states that it does not include the current status of remediation actions that may be underway. It is important that such actions be tracked and monitored by BTT in order to determine if completed activities mitigate or decrease risks to an acceptable level within risk tolerance limits. By closely monitoring these activities, BTT will have an opportunity to perform a complete risk assessment by identifying and recording these mitigating factors, determine the residual risk and take further necessary actions in responding to the risks.

Recommendation 3

We recommend that additional risk and mitigating factors be used in the assessment of aging information systems risks to identify all potential threats and determine necessary actions to minimize such threats to acceptable levels.

2.4 No department involvement in risk rating

BTT assigns its system architects and business analysts to complete the risk rating of business applications. These individuals are considered subject matter experts because of their involvement in the development and maintenance of the applications. We observed that department stakeholders, such as those who use or manage systems, are not involved in determining the risk rating, and they only receive the final version of the IT Asset Condition Report.

As noted in **RECOMMENDATION 3**, additional risk factors, such as system reliability and the ability to meet department needs, should be used when determining the risk ratings of business applications. Since department stakeholders are first-hand users of systems, they can give essential feedback and data that can be used as input into these risk factors and the overall risk assessment.

Also, given that departments need to perform actions to respond to the risks identified in the IT Asset Condition Report, it is important that they are involved in the risk assessment process. Departments need to understand the cause of the final technical risk rating in order to determine and implement reasonable action plans that would address the risks.

Recommendation 4

We recommend that BTT collaborate with the departments when assessing the risk of IT assets to ensure their first-hand knowledge is considered in a complete assessment of aging systems' risks.

2.5 Inaccuracies in ratings and presentation of results

We noted there are no input controls in recording the supporting technologies in the IT Application Portfolio Management system. There are no edit and validation checks that would prevent inaccurate entries. There are also no rigorous review processes that would detect such inaccuracies. We found some supporting technologies were not accurately rated when we compared the extract of risk ratings from the IT Application Portfolio Management system against the ICT Standards. For example, a version of Windows operating system was rated medium risk (yellow) in the IT Application Portfolio Management system when the ICT Standards deem this operating system to already be under the Retirement phase of the lifecycle and rated as high risk (red). This inaccurate rating of a supporting technology could lead to an inaccurate overall risk rating presented in the IT Asset Condition Report or incorrect action taken to address the risk. In the case of this example the overall risk rating was not impacted because the application support resource was also deemed to be high risk. However, there is a possibility that action would not be taken to address the operating system risk.

IT Asset Condition Reports also include information on disaster recovery capability. As systems age, they face a higher risk of failure. The disaster recovery capability provides a level of assurance that service continuity needs are met and essential business operations are preserved. As a result, BTT recommends that departments review their disaster recovery capability to ensure their disaster recovery plans are in place and can be carried out when necessary.

BTT informed us that some departments have already built disaster recovery capability for their applications. For example, they told us that the Department of Families already has a disaster recovery capability for one business application. However, we observed that disaster recovery capability was not in place on any system in the IT Asset Condition Reports of the 5 sample departments. Upon further inquiry with BTT, we were informed that this is considered an error and should be corrected. This error could have been detected if the reports had been reviewed by department stakeholders prior to finalization and release.

As BTT expects departments to use information in the IT Asset Condition Reports when deciding the necessary actions to address the risk, BTT needs to ensure that the reports are accurate and correct.

Recommendation 5

We recommend BTT implement methods to ensure the IT Application Portfolio Management system and IT Asset Condition Reports are free from errors and omissions.

3 Lack of practices to monitor aging systems risk ratings and responses

Risk analysis results should be reported to all affected stakeholders in formats that help in decision making. Decision makers should be informed of the consequences of continued use of aging information systems, the likelihood of such consequences from happening, and the impact to the Province. The report on risk analysis results should also include the current risk profile which incorporates the effectiveness of existing controls, remediation activities, and remediation status.

We found that while activities used to determine the technical risk of business applications have been put in place, the activities to monitor the aging systems risk ratings and corresponding risk responses are not well-defined. We based this conclusion on the following findings:

- There is no combined report of the aging systems risks and responses across all departments (SECTION 3.1).
- The IT Asset Condition Reports are distributed to a limited audience and lack sufficient risk rating information to support stakeholders (SECTION 3.2).
- The IT Asset Condition Reports are not released in a timely manner (SECTION 3.3).

3.1 No combined report of the risk ratings and responses across all departments

The **General Manual of Administration** establishes BTT as the Province's central agency for ICT management. As such, we expected BTT would take a lead role in managing the risks of continued use of aging information systems, including:

- Setting government-wide strategic directions.
- Collaborating with departments to take actions to mitigate or reduce risks to tolerable levels.

The **General Manual of Administration** (GMA) is the authoritative source for the financial and administrative policies and procedures of the Government of Manitoba as approved by the Treasury Board. Section 5 of The Financial Administration Act provides the basis in law for the GMA.

BTT has implemented practices showing that it is moving in this direction, including the creation of the IT Asset Condition Report and its accompanying procedures and guidelines, as well as the use of a system for risk rating. BTT has also provided these IT Asset Condition Reports to the departments.

However, we noted BTT did not prepare and review a combined report of asset condition across all departments, which summarizes the risk ratings for all supporting technologies, business applications and shared network infrastructure. This report would have identified recurring themes and root causes that would enable BTT and departments to have a portfolio-based approach in responding to risks. It could also be used in monitoring the actions taken or planned that address the risk ratings. Being the central agency that manages the province's ICT assets, BTT is familiar with the common supporting technologies

used across departments and the issues these technologies face. By creating portfolio-based solutions that apply to multiple departments, risk mitigating action plans become more effective and impactful.

Recommendation 6

We recommend that BTT prepare and review a combined aging systems risk assessment report across departments.

3.2 IT Asset Condition Reports have limited distribution and lack sufficient risk information

BTT only distributes IT Asset Condition Reports to Deputy Ministers, Assistant Deputy Ministers, and Executive Financial Officers. This is done through email. Executive Financial Officers of the sample departments we spoke to told us they did not feel they could distribute the IT Asset Condition Reports further. This is because BTT specifically mentioned in its emails that the reports must not be distributed further to protect the government's technology environment. As such, department IT leaders, who should be considered stakeholders, were unaware of the results of the technical risk rating in the IT Asset Condition Reports. The confusion over who can view the results of risk analysis could have been prevented if there were meetings between the departments and BTT, where questions on report distribution and other matters could have been raised, and clarification provided. We were informed by the Executive Financial Officers of the sample departments that there were no meetings held to discuss the IT Asset Condition Reports after these were sent to them.

IT Asset Condition Reports also only show the final technical risk rating of each application—they do not provide a breakdown of the risk factors used to determine this final rating. Seeing these details would be beneficial to the departments, which are responsible for securing funding for ICT assets and prioritizing ICT projects. With this information, departments could make relevant and informed funding decisions, and work with BTT to develop appropriate risk mitigation actions.

Recommendation 7

We recommend BTT meet with the departments to:

a. Determine the appropriate content to include in the IT Asset Condition Report.
b. Determine which stakeholders should receive the IT Asset Condition Report.
c. Discuss the IT Asset Condition Report results and collaborate on adequate actions to respond to the risks.

3.3 IT Asset Condition Reports not released in a timely manner

The process of completing IT Asset Condition Reports was developed in 2019, and is part of the annual IT demand planning process. IT Asset Condition Reports are meant to aid departments in preparing business cases to prioritize their IT projects.

Every year, departments are required to submit business cases to BTT by a certain date. We noted departments did not receive the 2020 IT Asset Condition Reports until after that date had passed. As a result, the IT Asset Condition Reports could not be used to support business cases for use in the 2020 demand-planning process. This could lead to IT Asset Condition Reports being considered ineffective in the demand-planning process, and could reduce the value these reports provide to stakeholders.

Recommendation 8

We recommend that BTT revisit the timeline of completing IT Asset Condition Reports to better align with the IT demand planning process.

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Additional information about the audit

This independent assurance report was prepared by the Office of the Auditor General of Manitoba on the aging information systems. Our responsibility was to provide objective information, advice and assurance to assist the Legislature in its scrutiny of the government's management of resources and programs, and to conclude on whether the risks associated with the government's aging information systems are identified and managed to reduce the probability of adverse impacts to system users and services delivered to Manitobans.

All work in this audit was performed to a reasonable level of assurance in accordance with the Canadian Standard for Assurance Engagements (CSAE) 3001—Direct Engagements set out by the Chartered Professional Accountants of Canada (CPA Canada) in the CPA Canada Handbook —Assurance.

The Office applies Canadian Standard on Quality Control 1 and, accordingly, maintains a comprehensive system of quality control, including documented policies and procedures regarding compliance with ethical requirements, professional standards, and applicable legal and regulatory requirements.

We have complied with the independence and other ethical requirements of the Code of Professional Conduct of the Chartered Professional Accountants of Manitoba, which are founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

In accordance with our regular audit process, we obtained the following from management:

1. Confirmation of management's responsibility for the subject under audit.
2. Acknowledgement of the suitability of the criteria used in the audit.
3. Confirmation that all known information that has been requested or that could affect the findings or audit conclusion, has been provided.

Period covered by the audit

The audit covered the period from January 2019 to August 2021, and this is the period to which the audit conclusion applies. However, to gain a more complete understanding of the subject matter of the audit, we also examined certain matters preceding and subsequent to this audit coverage period.

Date of the audit report

We obtained sufficient and appropriate audit evidence on which to base our conclusion on December 10, 2021 in Winnipeg, Manitoba.

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Summary of recommendations

In this section we provide the summary of recommendations to Business Transformation and Technology and the Department of Labour, Consumer Protection and Government Services.

RECOMMENDATION 1

We recommend that BTT implement measures to completely and accurately identify and record supporting technologies and business applications in the IT Application Portfolio Management system and IT Asset Condition Reports.

Response of officials:

Management is aligned with the recommendation in principle and is assessing options, timing and costs to develop and implement tools and processes to enable more complete and accurate identification and recording of business applications and supporting technologies in the IT Application Portfolio Management system and IT Asset Condition Reports.

RECOMMENDATION 2

We recommend that:

a. The ICT Standards be updated to reflect all supporting technologies currently in use.
b. A process be put in place to regularly update the Information and Communications Technology Standards in order keep pace with the changes in technology.

Response of officials:

Management is aligned with the recommendations in principle and is assessing options, timing and costs to:

a. establish an annual integrated application and infrastructure health process summarized in the IT Asset Condition Report.
b. establish an annual process for maintaining a comprehensive set of ICT standards.

RECOMMENDATION 3

We recommend that additional risk and mitigating factors be used in the assessment of aging information systems risks to identify all potential threats and determine necessary actions to minimize such threats to acceptable levels.

Responses of officials:

Management is aligned with the recommendation in principle and is assessing options, timing and costs to develop a more comprehensive set of risk factors aligned to IT architectural standards used to assess systems for the IT Asset Condition Report.

RECOMMENDATION 4

We recommend that BTT collaborate with the departments when assessing the risk of IT assets to ensure their first-hand knowledge is considered in a complete assessment of aging systems' risks.

Responses of officials:

Management is aligned with the recommendation in principle and is assessing options, timing and costs to develop and implement an annual Risk and Control Assessment process that will involve departments to rate and respond to risks with aging systems.

RECOMMENDATION 5

We recommend BTT implement methods to ensure the IT Application Portfolio Management system and IT Asset Condition Reports are free from errors and omissions.

Responses of officials:

Management is aligned with the recommendation in principle and is assessing options, timing and costs to establish processes that leverage multiple mechanisms for verification of inventory and their condition including, but not exclusive of, auto-discovery tools, license management, service provider reports, and internal review as part of the preparation of the IT Asset Condition Report.

RECOMMENDATION 6

We recommend that BTT prepare and review a combined aging systems risk assessment report across departments.

Responses of officials:

Management is aligned with the recommendation in principle and is assessing options, timing and costs to establish a review process with the business departments for a combined enterprise-wide application and infrastructure health assessment (IT Asset Condition Report).

RECOMMENDATION 7

We recommend BTT meet with the departments to:

a. Determine the appropriate content to include in the IT Asset Condition Report.
b. Determine which stakeholders should receive the IT Asset Condition Report.
c. Discuss the IT Asset Condition Report results and collaborate on adequate actions to respond to the risks.

Responses of officials:

Management plans to

a. establish a Health Assessment planning process to ensure appropriate content is included in the IT Asset Condition Report.
b. establish a planning process to ensure appropriate stakeholder reviewers receive the IT Asset Condition Report.
c. include the relevant results of the department IT Asset Condition Report and identify adequate actions to respond to risks.

RECOMMENDATION 8

We recommend that BTT revisit the timeline of completing IT Asset Condition Reports to better align with the IT demand planning process.

Responses of officials:

Management is assessing options to synchronize the Health Assessment process so the IT Asset Condition Reports are inputs into the IT Demand Planning process (part of the Portfolio Management process).

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Admin Support
Jomay Amora-Dueck
Tara MacKay

Graphic Design
Waterloo Design House

Website Version

Auditor General
MANITOBA

For more information, please contact our office at:

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

Phone: 204-945-3790 Fax: 204-945-2169
contact@oag.mb.ca | www.oag.mb.ca

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