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IT Master Plan (ITMP)

April 2024

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1.0 Executive Summary

1.1 Background

Jasper is a unique municipality, located within the Jasper National Park. This location presents benefits such as the beautiful location, picturesque scenery and high tourism but also challenges due to its remote location and distance from other major centres. This has become more apparent as the municipality looks to enhance the working environment for staff as well as look for ways to improve overall service delivery. The opportunity to leverage technology across the municipality to improve customer and staff experiences, to streamline processes and ideally to increase productivity is of great interest.

Currently, the Information Technology (IT) at the Municipality of Jasper is supported via a part-time IT Coordinator and a Managed Service Provider (on a time-and-materials contract).

In 2023, the Municipality of Jasper (the "Municipality") decided to move strategically with the development of a 5-Year Information Technology Master Plan (ITMP).

The key attributes of the ITMP are:

- Assess the current IT environment including technology, infrastructure, security, spending, IT Management Practices
    - Comparison with Municipal Peers and Industry Trends
- Identify risks and areas of opportunity to leverage technology and data better
    - Things that need to be fixed and by when they should be fixed
    - Opportunities to use technology, data and digital in digitizing analogue/paper processes
- Determine an accountability model for technology management
    - A to-be IT functional model (including leadership) to deliver the most value to the Municipality
    - A futuristic IT functional model that is sustainable over the next 5 years
- Develop a framework to sustain change and continuously improve
    - The level of investments required to support a baseline level of operations with proper risk mitigation
    - Rules and criteria for making technology decisions for the Municipality

- Highlight future technology needs and priorities (infrastructure + business solutions)
    - Set a vision, goals and objectives for the future
    - A clear road map that indicates what projects and activities need to occur in the next 5 years
    - An action plan to reach the objectives, monitor progress and measure success

1.2 Opportunities

With the 5-Year IT Master Plan, the Municipality has an amazing opportunity to recalibrate the IT function; with a more focused and dedicated leadership and staff; to better align with business needs, improve service delivery and meet (or exceed) existing corporate priorities designed to serve customers better.

The Municipality has the opportunity to start by building solid infrastructure foundations and a sustainable operating model that has a strong reliance on good partnerships, contracted resources and managed services to support the IT needs of the Municipality. However, the successful evolution of technology necessitates viewing it through the lens of "people, process, then technology." Simply adding technology without addressing underlying processes or lacking adequate resources will fail to generate value or ensure long-term sustainability.

Aside from building capacity and skillsets within the IT Operating Model, the Municipality also has the opportunity to assume a corporate approach to technology decision-making (technology governance). Further maturity with technology governance, strategic planning, policy and process development, technology training, project management and prioritization will help create an IT posture and decision insights that will make sure investments are made to support the highest needs of the Municipality and the Community.

1.3 Risks

The risks within technology environments are becoming more prominent as cybersecurity threats directed against municipalities continue to be commonplace. Ensuring the custody and control of private information is an important component in maintaining trust in the community and across the Municipality. Council and Senior Leadership are currently accepting a very high level of technology risk. This risk level is expected to continue to increase as security and environmental threats evolve.

The municipality's current technology platform and security posture constrain its ability to swiftly and effectively recover from various environmental and/or cyber threats. Compounding these vulnerabilities is that the municipality depends on one part-time IT resource for support and maintenance of its technology platform. This dependency amplifies the risk profile and underscores a critical need for broader support and expertise in managing the Municipality's technology assets.

Also, data represents one of the biggest untapped resources in the Municipality with which to make better decisions, tell success stories and improve workflows. Staff want to know that IT has their back when it comes to protecting municipal data as well as supporting their needs around the best possible utilization of technology.

1.4 ITMP Programs of Work

This Information Technology Master Plan (ITMP) is intended to be a roadmap to help guide the Municipality down the right path. Upon implementation, it will build solid foundations in the technology environment that will further extend IT capabilities and further evolve the Municipality skillfully in the areas of business solutions, data integrations and online services.

The ITMP identifies recommended actions under six programs of work:

- IT Infrastructure and Operations
- Cloud Framework and Technologies
- IT Policies and Standards
- IT Security
- Technology Training
- Information Management Technology Platform

Additional opportunities related to GIS, Data & Integration, Corporate and Expert Business Solutions and Customer Portals & Web are listed here: Other Opportunities

Nearly 55 recommendations have been categorized under these programs of work and are described in detail in this plan.

Also, in order to successful implement the ITMP, few critical success factors are needed as a pre-requisite:

- IT Funding
- IT Organizational Model

- Strategic IT Leadership Role
- IT Planning and Oversight Model
- Third-Party IT Support

Additionally, an ITMP Work Plan has been developed (see Section – Work Plan) and includes a suggested sequencing of the recommendations based on interdependencies and capacity to support them. Approximations regarding funding requirements and the scale of the initiatives along with suggested leadership for each action have also been proposed.

The ITMP is doable. It's scaled to the size and capabilities of the Municipality as it continues to scale out by following the various recommendations and leading practices included herein. Prudent funding and investment decisions *will* need to be made along the way – including the IT functional model and IT infrastructure. The ITMP will also develop rudiments to make technology decision-making easier and better support the business in meeting its many service delivery aspirations.

The key to success with the ITMP is to start small. Build on the technology foundations and establish proper posture. Then tackle the more complex actions when the competencies are in place to support them fully. Also, ensure that the Municipality is better aligned around technology decision-making and that priorities, as well as roles and responsibilities, are clearly defined. Commit but be mindful that concessions need to be made along the way.

1.5 Linkage to Council's Strategic Priorities

An important driver for this is rooted in the Municipality of Jasper's Strategic Priorities (2022-2026) where it's noted that the organization will "*embed a culture of service delivery excellence and innovation throughout the organization"*

The Council also identified a number of their top priorities under the banner of "*operational excellence" that they want to ensure residents receive quality service that provides strong value for dollars and that the staff are empowered by investing in the training and tools they require.*

In addition, by focusing on technology, solutions, data and online services through the proposed ITMP Workplace, we strongly believe that Jasper can meet its strategic priorities, especially operational excellence and also successfully support the accomplishment of other priorities including housing, community health, relationships, environment and advocacy.

1.6 Expected Outcomes and Value

This increased investment in technology and resources should deliver needed technological foundations that will provide service improvements and savings through cost avoidance.

The increased investment in technology as per the work plan is expected to immediately:

- Simplify and standardize the IT network and technologies thereby reducing the support effort needed as well as reducing security risks
- Build and maintain network design that is suitable for leveraging cloud-based applications
- Minimize data risks by improving data storage practices and tools
- Improve overall Internet services and interconnectivity (facility to facility) which is imperative to all modernization efforts (while working in partnership with other external parties)

In the long run, this increased technological investment will deliver:

- Enhanced customer service and engagement.
- Increased cost-effectiveness of service delivery and improved service delivery timelines.
- Improved efficiency of the municipal workforce.
- Help municipal staff in making informed decisions.
- An increase in the accessibility and availability of services.

2.0 Introduction

Perry Group Consulting (Perry Group) is a firm that specializes in technology in municipalities. Our mission is *building better municipalities* and we have worked with over 200 municipalities across Canada on technology strategy and planning work, business process optimization and solutions implementation.

The Municipality commissioned Perry Group to develop an Information Technology Master Plan (ITMP) to help fully leverage technology investments and build the necessary foundations for future service improvements. The project began in October 2023 and was sponsored by the Municipality's Chief Administrative Officer.

2.1 Purpose of this Report

The Discovery Report – submitted earlier in this engagement by Perry Group – reviewed foundational areas such as the technical infrastructure, business solutions, policies and procedures, and IT Service Management Practices. It identified areas that were working well and in a good position to move forward, as well as areas that require further attention. This Final Report provides details on the work plan, underlying opportunities, the prioritization processes and an understanding of the expected benefits.

2.2 Developing the IT Master Plan

Given the importance of technology and data to the Municipality, from the outset, this project was approached as an enterprise initiative, not just an IT project. The project was essentially developed in two phases:

Discovery: A Current State Assessment was conducted by Perry Group, which involved input from all staff via a survey, assessments of technologies and systems management practices, and interviews with the IT coordinator and current MSP. The consulting team also met with representatives from all departments.

Plan: The consulting team worked with the Director, Finance and administration, the IT Coordinator and SLT to prioritize opportunities, develop a series of activities in the work plan and prepare this final written ITMP.

2.3 Acknowledgements

Perry Group would like to acknowledge the active involvement, cooperation and support of Jasper's staff, leadership and stakeholders throughout this project. The consultants would like to especially thank the IT Coordinator who was totally dedicated to this project and spent a lot of time and effort helping the consultants throughout this project.

3.0 Findings

This section of the Report provides a high-level overview of the current state assessed through the use of a digital staff survey, various Perry Group reference and evaluation models as well as several interviews with all business areas and managed service providers. The details were presented in the Discovery Report to SLT in December 2023.

3.1 Staff Survey Results

The survey responses were submitted from Oct 25, 2023, to Nov 02, 2023. In total, there were 51 responses from a total of 120 staff with a 43% response rate. This data was then validated through departmental interviews and project team meetings. The following are the main takeaways from the staff survey.

- Core Technology Experience - Staff is generally not satisfied with their current technology experiences including business solutions, services and devices.
  - Technology services including Network drives, Wi-Fi, Internet/Connectivity and Remote Access have less than a 50% satisfaction rate
  - WorkTech, Diamond, Helpdesk, MS Teams, Univerus, and HRISMyWay are the topmost dis-satisfied business systems
  - Among devices, only Smartphones provided by the Municipality meet the Satisfaction Target of 80% and the top dissatisfied devices are Desk phones, Desktop computers, tablets, Shared computers or kiosks, and Meeting Room A/V equipment.
- IT Operations – Generally users are satisfied with IT Operations including Operational Business Solutions Support, General User Support, IT Assets Support, Core IT Infrastructure and Mapping Service Support.
  - 54% of respondents selected “I Don’t Know” regarding “Mapping and GIS” which highlights an opportunity to inform and educate users in this area.
  - ~40% of respondents are satisfied with operational business systems providing an opportunity to improve support in that key IT service area
- IT Communications - IT communicates major system outages well.
  - Concerning other IT Operational services including understanding business needs, overall IT communication, staying up to date with technology changes and adopting technology, the satisfaction mark drops to 50% or less.

- IT Support - Satisfaction concerning IT Support (Knowledge, Quality, Response and Resolution times) is good (70-78%) and close to the Perry Group recommended target of 80%.
- Technology training - All staff have indicated that they need more training, more face-to-face training. This is an area that provides a huge opportunity for improvement.
- Organizational Readiness – All factors (problem-solving, continuous improvement, empowerment, networking and leadership) that indicate an organization's readiness and eagerness towards digital transformation were shown as low (< 60%) in the survey.

3.2 Technology Model™ (TM)

The TM™, developed by Perry Group, identifies the key technologies that should be in place for a Municipality. This model is expressed through four layers – Infrastructure, Business Solutions, Data and integration and Customer-Facing. A house analogy is used to describe the TM, with the Infrastructure Layer as the foundation, the Business Solutions Layer as well as the Data & Integration Layer as the interior and frame and the Customer-Facing Layer as the roof and external components. The Corporate Posture layer can be perceived as the architecture of the entire building.

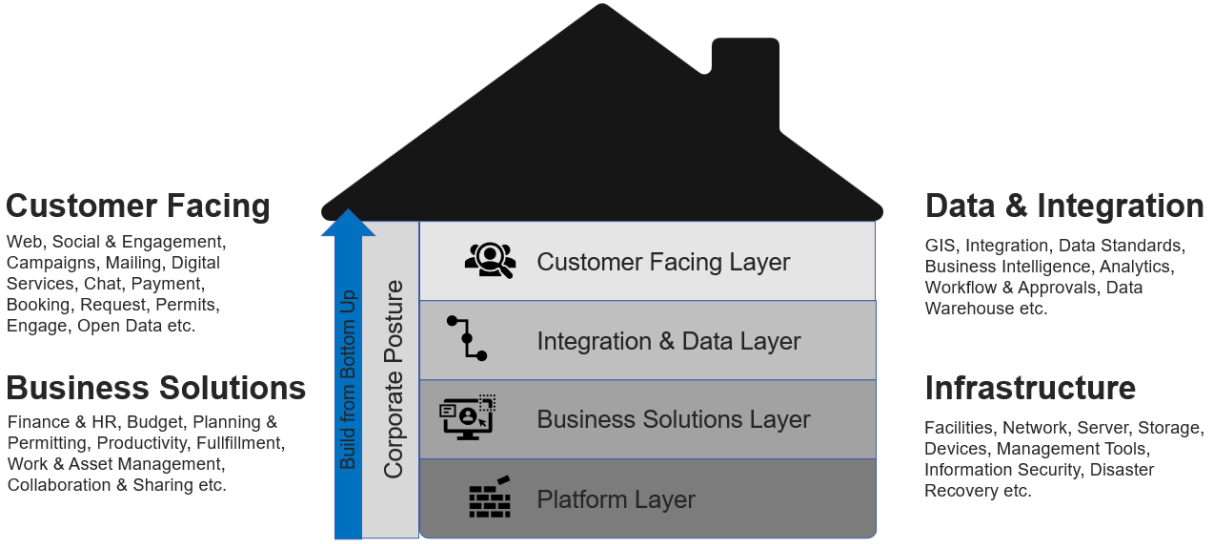

Figure 1: Technology Model ™(TM) as a House

The Infrastructure Layer includes things like facilities, networks, servers, storage, devices, productivity and management tools, information security, disaster recovery, etc.

The Business Solutions Layer includes solutions and systems for Finance and HR, budget, Planning and Permitting, productivity, fulfillment, Work and Asset Management, collaboration and sharing, etc.

The Integration and Data Layer is where GIS, integration, data standards, business intelligence, analytics, workflow and approvals, data warehousing, etc. sit.

The Customer-facing Layer is where you'll find the website, social and engagement, campaigns, mailing, digital services, chat, payment, booking, request, permits, engagement, Open Data, etc.

Technology must be built from the bottom up – on a solid foundation. Similar to a house, if this foundation is not adequate, other components built on top of it will not work well and will require continual support and maintenance to function, even at the most basic level.

If there is no architecture managing the build, it will not be completed wholistically or by a design that best supports the organization as a whole.

The TM model illustrates a more detailed account of the house analogy. While not exhaustive (in terms of capturing all the elements of technology in use) the TM provides a good illustration that can help identify areas that are of risk to the organization, those that need work, as well as those that are in relatively good shape.

Below is a detailed illustration of Jasper's TM ™ Assessment. Colour coding and corresponding entries identify the level of maturity for the different parts of the technology model, where "Good Shape" is green, "Some Work Needed" is yellow, "Major Work Needed" is orange, "Risk / Replace" is red and "Gap" is white.

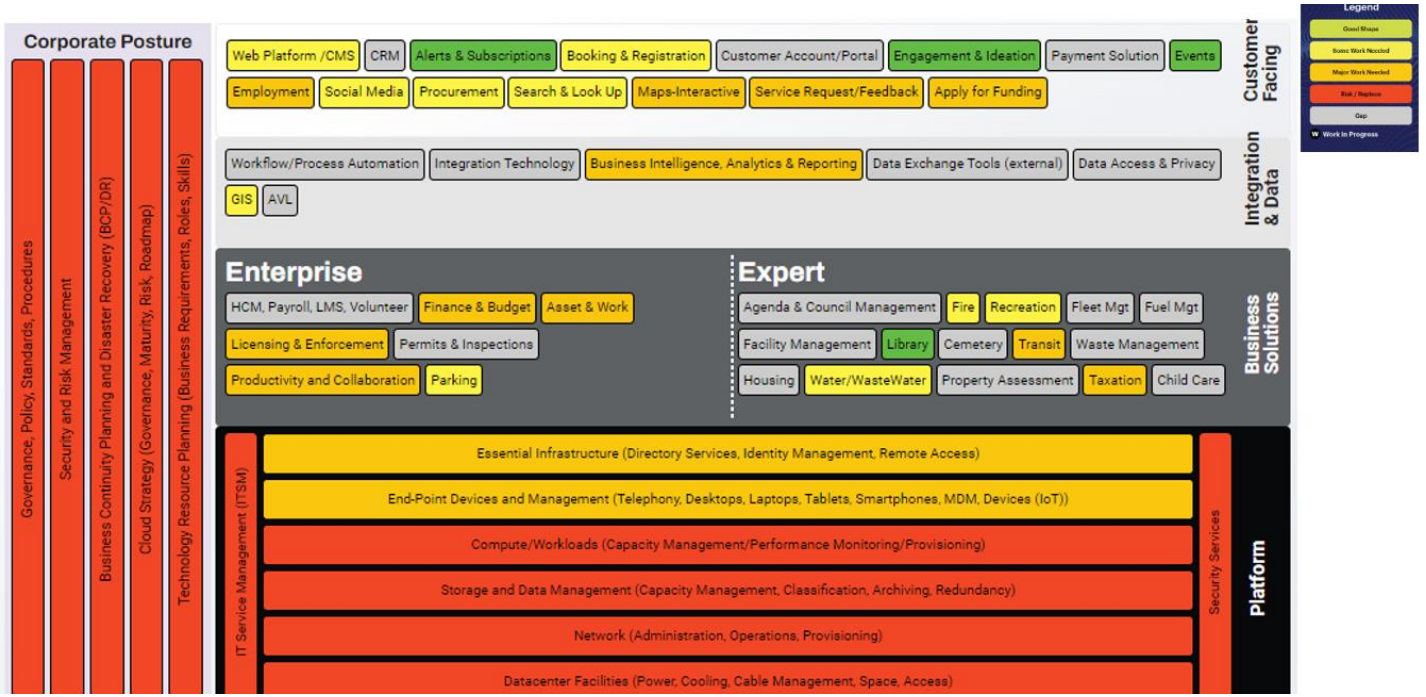

Figure 2: Jasper's Technology Model ™ Assessment

The detailed findings for each layer including the risk/implications were highlighted in the Discovery Report. Below is a summary of those findings.

- Corporate Posture - IT Service Management processes, tools and frameworks are absent with few exceptions such as access management, OS patch management, and partial IT budget management. Missing technology-related policies, procedures, and governance mechanisms impact proper risk-based decision-making when it comes to technology investments related to but not limited to cloud migrations, and disaster recovery.
- Infrastructure - Network management, telephony and device management lack standardization and consistency. Technology investments (time and resources) may not be used on the right things at the right time in the right direction. Current infrastructure is complex, not based on best practices, posing huge risks and not scalable for meeting future (cloud) needs.
- Business Solutions - There is limited support and training for business solutions in place and a lack of capacity to leverage them fully. Some business solutions may not meet future needs and may have to be replaced.

- Data & Integrations - Most business solutions are stand-alone with limited to no integrations with each other including GP/Diamond and GIS. The absence of automation workflows means staff are not able to easily share, create, collaborate and generate insights from data to inform future municipal services.
- Customer-Facing - The website and its multiple features including engagement tools, alert systems, and feedback mechanisms if not fully utilized will not provide the intended benefits to the Community. The absence of end-to-end digital processes will negatively impact customer and employee experiences as expectations continue to increase.

3.3 IT Organizational Structure, Function and Skills

As part of the Discovery process, an assessment was conducted to understand the current responsibility and accountability in place for the key components of the IT management function. The IT Functional Model illustrated here is not meant to be exhaustive, or overly detailed, but is instructive in identifying those key elements that should be managed by IT within the Municipality (of the size of Jasper) as well as those elements that can be managed through external resources: contractors, managed service providers etc.

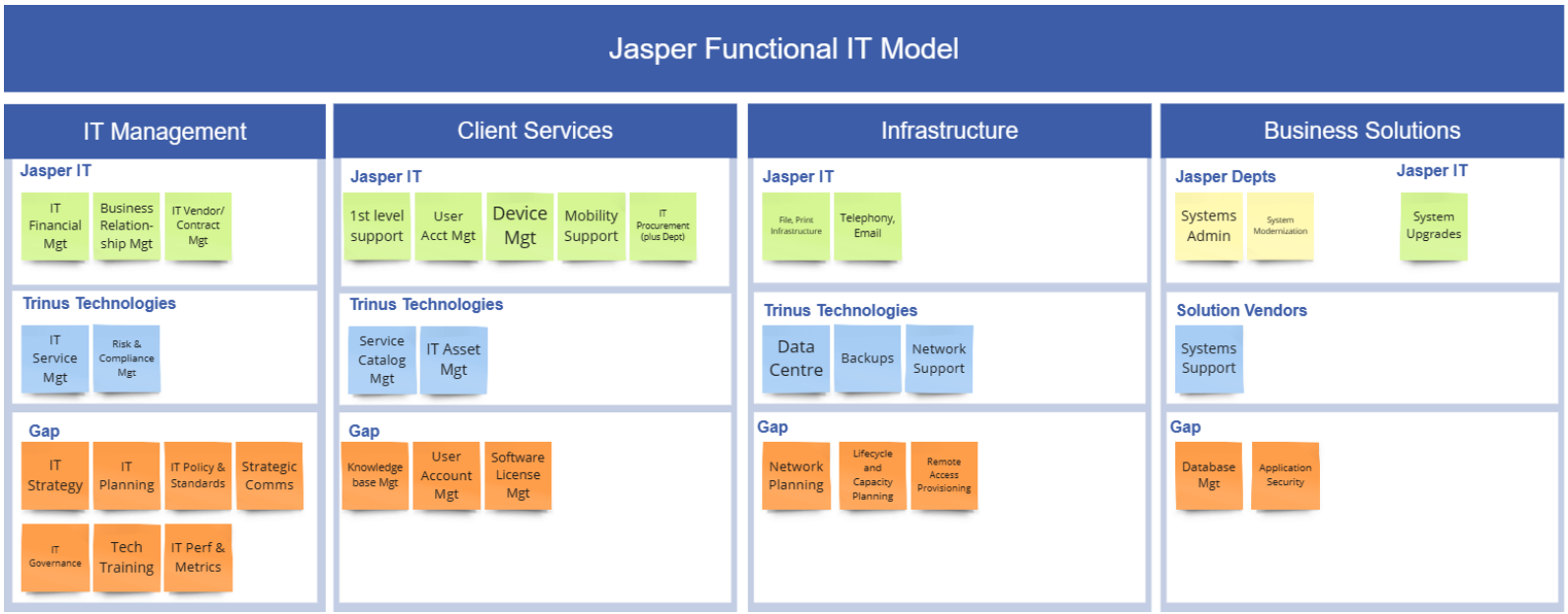

Figure 3: Jasper's Current Functional IT Management

The following are the four functional areas used to identify the necessary skills:

- IT Management – IT Strategy and Planning, Business Relationship Management, IT Governance, IT Policy/Standards, Risk and Compliance Management, Vendor and Contract Management, IT Performance Metrics, Education and Training.
- Client Services – Knowledge Base Management, IT Asset Management.
- Infrastructure – Network Planning and Support, Lifecycle and Capacity Planning.
- Business Solutions – Business Solution Modernization, Application Security.

As illustrated in the figure, there are IT functional gaps, clearly indicating functions that are not being managed to the desired degree that they need to be and that are observed in high functioning peer municipalities. For example, there is a lack of formal corporate IT strategy and planning in place. Without a shared forward-looking vision driving technology investment and resource allocation, it will be impossible to identify, prioritize and action the "right" projects delivering the best value/best return to the Municipality and the Community.

The allocation of one part-time IT Resource to support all functional areas is simply unsustainable. The requirements to support each functional area necessitate a varied skill set that can only be achieved through internal/external partnerships with vendors, service providers and senior advisors.

In other words, Jasper needs to take a new approach and adopt an IT operational model (discussed later) that adequately addresses these gaps and improves the ability to support the key functional areas. Such an operational model is required to manage technology/infrastructure now and in the future.

3.4 Financial Analysis

In terms of expenditures relating to technology, the Municipality falls much below Perry Group's suggested range. As shown below, Perry Group's suggested range (after working with over 200+ municipalities) for IT Operating Expenditures is in the range of 2.5%-4.5%. Gartner, on the other hand, has a median value for IT Operating Expenditures at 4.3% and a desired range of 3-6%. Jasper's operating expenditures are at 0.67% which is significantly below any desired range for a functional municipality.

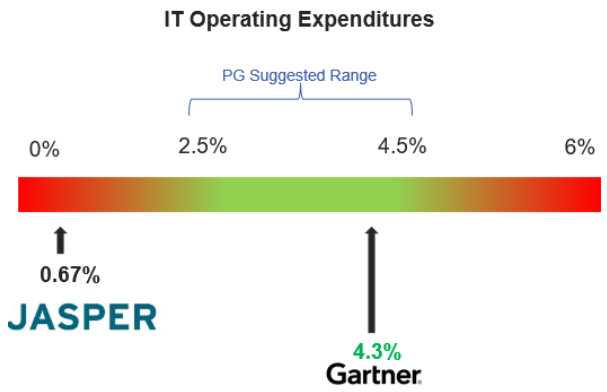

Figure 4: Jasper IT Operating Expenditures

Without IT salaries and benefits included, only 0.38% of the Operating Expenditures budget is spent on technology. It is tough to make progress with such low funding.

As the municipality considers the migrating government services and operations to the cloud, there needs to be a shift in spending from capital to operational expenses. Even though, the Municipality will simultaneously develop cost-reduction plans for outdated technologies and wasted resources, there will be an increase in the demand for more operating funds for Information Technology.

Furthermore, initial high-level analysis shows all IT-related expenses (purchases, licenses, support) are spread across multiple department budgets. Through the survey and our discussions with staff, they commonly noted that they were paying for individual system licenses out of their department budgets. These should all be part of the overall picture from a disaster recovery and security standpoint. Also, the Municipality needs to consider the economies of scale and utilize corporate licensing for systems and solutions. Having technology budgets dispersed throughout the organization creates a challenge to fully understand the total cost of ownership of the technology solution and environment.

3.5 Security Assessment

Jasper's current security posture was assessed using the 18 CIS Critical Security Controls (CIS Controls) framework by the CIS Centre for Internet Security with a prioritized set of best practices created to stop dangerous threats. A basic CIS 18 IG1 (essential cyber hygiene) assessment was completed (see illustration below)

CIS 18 CRITICAL SECURITY CONTROL		
#	Control	Maturity
1	Inventory and Control of Enterprise Assets	PERFORMED INFORMALLY
2	Inventory and Control of Software Assets	NOT PERFORMED or AD HOC
3	Data Protection	NOT PERFORMED or AD HOC
4	Secure Configuration of Enterprise Assets and Software	PERFORMED INFORMALLY
5	Account Management	PERFORMED INFORMALLY
6	Access Control Management	NOT PERFORMED or AD HOC
7	Continuous Vulnerability Management	NOT PERFORMED or AD HOC
8	Audit Log Management	NOT PERFORMED or AD HOC
9	Email and Web Browser Protections	PERFORMED INFORMALLY
10	Malware Defenses	PERFORMED INFORMALLY
11	Data Recovery	PERFORMED INFORMALLY
12	Network Infrastructure Management	NOT PERFORMED or AD HOC
13	Network Monitoring and Defense	NOT PERFORMED or AD HOC
14	Security Awareness and Skills Training	NOT PERFORMED or AD HOC
15	Service Provider Management	NOT PERFORMED or AD HOC
16	Application Software Security	NOT PERFORMED or AD HOC
17	Incident Response Management	NOT PERFORMED or AD HOC
18	Penetration Testing	NOT PERFORMED or AD HOC

Figure 5: Jasper CIS 18 Assessment

As observed through the illustration, the current infrastructure and security controls are predominantly at the 'Not Performed' or 'Ad Hoc' maturity. The results of the assessment indicate a lack of systematic and consistent approaches to managing the corporate technology platform and management of cyber risks. Such a cyber security posture exposes Jasper to substantial risks including but not limited to: Data Breaches, Data Loss, Ransomware, Operational Disruptions, Financial Losses and Compliance Risk.

3.6 Infrastructure and Data Risk

Jasper faces technology and infrastructure risks at multiple levels. However, understanding such risks can be challenging for the Municipality because of various factors. Below are some of the factors that make technology risks complicated to understand.

Factors	Details
Complexity of the Technology	Can be intricate and difficult to grasp for those without a background in technology.
Rapid Pace of change	The Technology landscape is constantly evolving at a fast pace, difficult to stay updated
Language and Communication Gap	Technical professionals might use jargon or technical terms that are not easily understood by those without a tech background
Different Priorities and Perspectives	Method to assess return on investment is not well understand / isn't being used
Underestimation of Risks	Easy to underestimate the potential risk and impacts of technology failures, cyber attacks and data breaches
Lack of Direct Experience	Makes it challenging to fully appreciate the scale and scope of technology risks
Visibility of Risks	May not be visible or tangible until an incident occurs

The Municipality also does not have a formalized Data Management Strategy and therefore minimal visibility into the costs and risks associated with stale/inactive data residing on production storage, and the potential of any sensitive data vulnerabilities to a data breach.

There are no tools currently being utilized to assess production data, data backups, and replication of data for disaster recovery purposes. There are several costs associated with the storage, backup, and replication of unstructured data that may be avoided or reduced with a proper Data Management Strategy.

4.0 Building the Framework for Success

In this section, key recommendations are listed that are required to take the IT Master Plan forward. Without these being in place, Jasper will find it difficult to make satisfactory progress.

4.1 IT Funding

In order to implement the recommended Strategy, the Municipality should increase its technology investment to a minimum 3% level. The current Jasper IT spend is approximately 0.67% of its total operating budget, which falls below recommendations from both Gartner and Perry Group. Ideally the Municipality could increase it's investment in technology by just 1% per year to reach the target of 3%. This is still below recommended ranges but seems to be a realistic and achievable goal.

Municipalities who spend between 2.5% – 4.5% of their annual operating budget on technology are more progressive in their customer services and internal efficiencies. A substantial increase of technology funding is recommended as a key success factor for the implementation of the recommendations.

The IT Leader (elaborated in the next section) in conjunction with Director, Finance and Administration, should conduct an IT budget review and look broadly across the organization to understand all elements of technology spending. Such a review may align with our recommendation to centralize all IT spending and increase fiscal oversight through the IT Leader and SLT.

Also, consideration should also be given to establish an annualized funding stream that will permit IT to contract third party resources to support unforeseen remediation initiatives or mid-year priorities that require additional capacity or skillsets beyond those of current IT staff.

Additionally, to facilitate the increased investment and ongoing support of technology, the Municipality should also look to alternative funding sources outside of the traditional IT funding envelope.

It is in the ongoing operations of technology that the Municipality faces the toughest challenge. For every new technology implemented, new demands are placed on the organization to support and maintain that technology.

The Municipality should continue to explore a range of alternative funding sources, successfully used by other municipalities to support technology investments. These include:

- Gas Tax (Community Building Fund Allocation) – Used to fund technology projects related to Asset Management
- Departmentally Funded Technology and Resources
- Grants and Challenges – E.g., Local Government Fiscal Framework.
- Growing Revenues to Offset Technology Costs – E.g., advertising linked to digital services.
- Technology Levy – Some municipalities have introduced a levy to fund investment in community technology, e.g., broadband or fibre levy to address improved internet services in the community

4.2 IT Organizational Model

4.2.1 Short-term Model

The IT department, consisting of a part-time IT Coordinator, cannot deliver on every technology, digital, data and business solutions front required by the Municipality. Third-party implementors, contractors and managed service providers are critical partnerships that need to be optimally leveraged to deliver on technology Work Plans. A more sustainable model with a strong reliance on contracted services, partnerships and managed services is needed to support the organization.

The reality of modern IT – particularly in municipalities – is that it is simply impractical to maintain in-house all the skills and capacity needed to plan, implement and manage the increasingly complex technical environment and burgeoning project demands. To maintain such an in-house IT team would be unaffordable or, in the case of a short-term need, a bad business decision and would mean hiring an unfeasible number of additional IT staff, far beyond what can be reasonably expected. For a Municipality of the size of Jasper, an ideal IT organizational model is typically a blend of permanent IT staff, consulting services through senior-level advisors, contractors and managed service providers (MSP). One person will simply not be able to deliver everything on their own.

Many municipalities engage a hybrid model of IT service delivery that combines internal IT and business skills with market-based expertise and services. Ultimately, it means that the IT Coordinator works more as the front-line support and as a coordinator of IT service delivery that will be executed by a combination of internal and external providers.

Within any organization – municipal or private sector – numerous routine activities are required to be completed but, in many cases, they can be completed more efficiently and at a lower cost by others. A review of internal resource capabilities and capacity will determine the activities that should be managed internally, and which activities can be handled by others (e.g., departments, contracted staff, vendors, or partners). The proposed contract with an MSP is a perfect example of leveraging outside skills and resources.

As such, IT needs to build capacity to coordinate and broker the use of external partners as well as solution and technology vendors. Through a contracted resource that has skills and experience in project management, business analysis and solution implementation, IT should be able to perform solution implementation from ideation to requirements gathering to contract negotiations, right through to the product delivery phase. Such contracted resources will be brought in as needed.

The following diagram depicts a short-term organization model for IT.

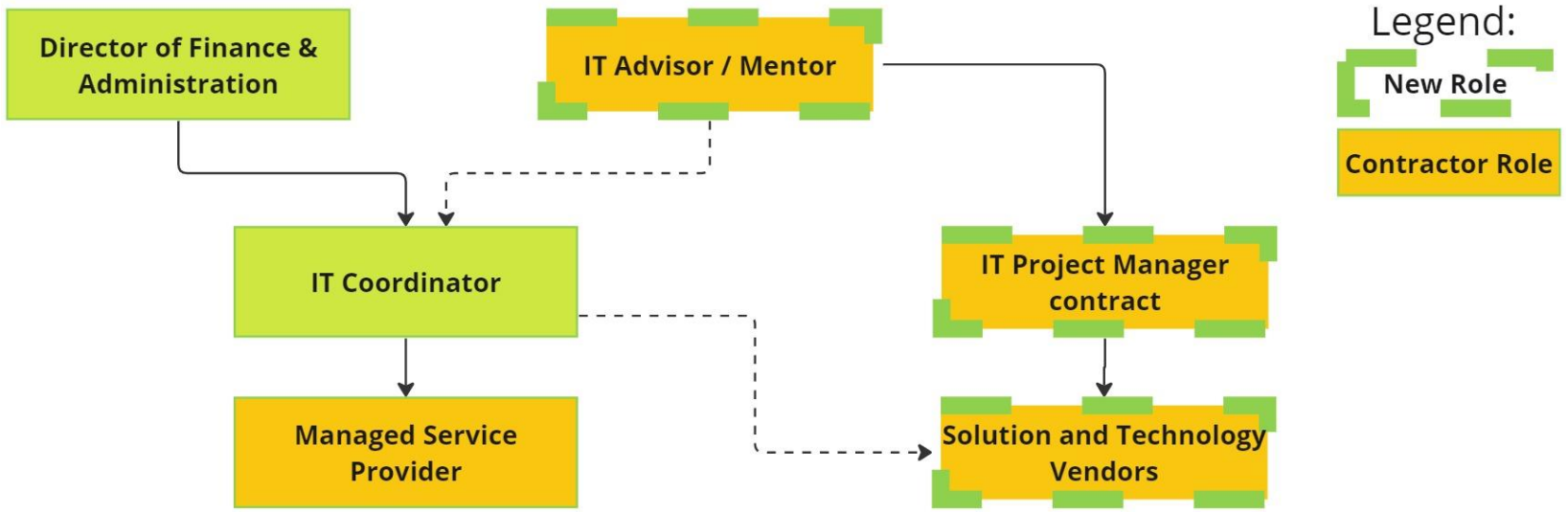

Figure 6:Proposed IT Organizational Model (2024-2025)

4.2.2 IT Coordinator Role

The IT Coordinator role will manage the day-to-day contractual relations with the third-party solution vendors. The IT Coordinator will need to work with a variety of partners to deliver technology Work Plans and corporate commitments. Also, a key relationship that the IT Coordinator role will continue to manage is with the Municipality's Managed Service Provider (MSP), which has been Trinus Technologies over the past several years. The partnership has been productive and helped the Municipality to establish a decent level of support and infrastructure management. A clear understanding of the service levels required and expected would be advisable with a formalized contract. The vendor management function in addition to executing the ITMP workplan and working with the MSP will require the IT Coordinator role to be moved from part-time to a full-time role within the Municipality. This will further enable a closer alignment with the MSP to provide the required service levels.

A current deficit concerning technology planning in Jasper has led to each department implementing technology and solutions on their own. This does not permit the IT Coordinator to work alongside business staff to ideate, plan, budget and manage the wide array of third-party vendors who are providing and implementing solutions.

Besides, IT strategy and planning, a corporate approach to vendor management, led by the IT Coordinator, will provide more scrutiny and oversight in this area and ensure that contracts reflect current constraints and opportunities and that ongoing commitments are being met.

Clarifying who does what will help everyone to fully understand the responsibilities of the IT Coordinator and the MSP or other partners.

4.2.3 Expanded IT Organizational Model (2026-2027)

Phase 2 expansion recommends creating a new role within the IT team, the Solutions Analyst. This role focuses on the data and integration and customer-facing layers of the technology model, introducing competencies such as data analytics, service design, integration planning, and front-end application management. Departments and Leaders consistently said they need more support with business solutions to ensure operational efficiency and to be able to better leverage their technology solutions. This role is intended to focus on leveraging the stability in the IT infrastructure and business solutions and to deliver better reporting, dashboard development, customer-centric online services as well as Business Intelligence and Data Analytics.

This could initially start as a part-time role and eventually grow into a full-time position reporting to the IT Coordinator.

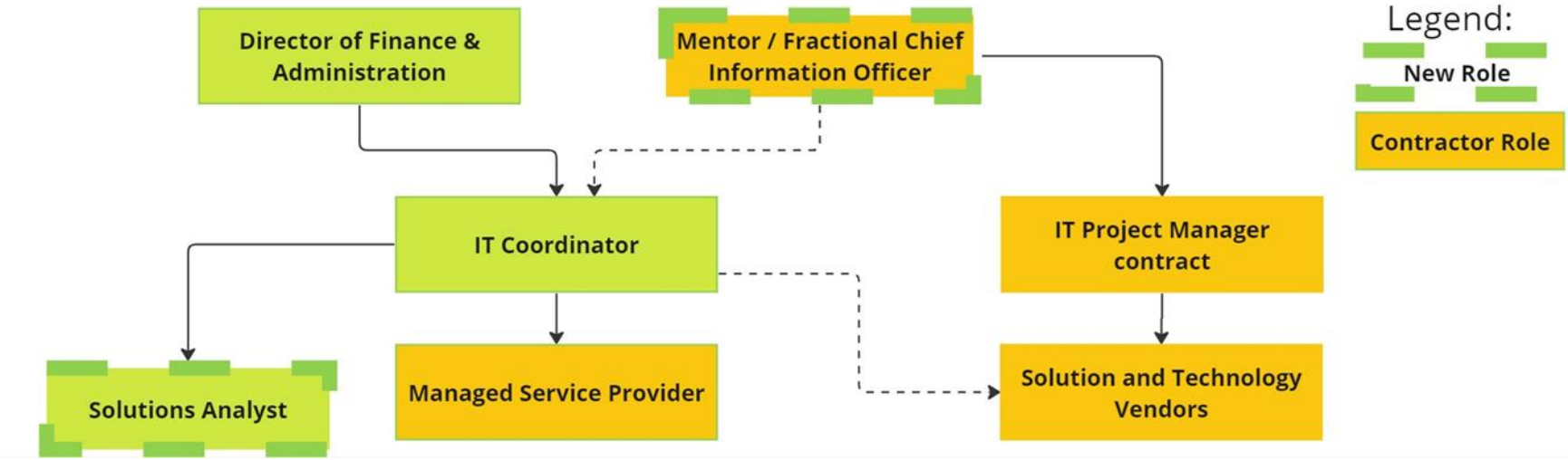

Figure 7: Phase 2 IT Organization Expansion (2026-2027)

4.3 Strategic IT Leadership Role

Throughout the Discovery process, it became clear that leadership is the key to ensuring that IT can elevate beyond its current “problem solver/fire extinguisher” state and support function status to become a better partner to the business. An elevated IT through an experienced municipal IT Leader in the form of a CIO-level IT advisor or coach could provide guidance to help build IT work and project plans that achieve operating goals and ensure that the decisions made are truly sustainable over time.

As a starting point, providing the IT Coordinator access to an advisor or mentor may be advantageous to help guide technology decision-making. This can be contracted on an annual retainer, but this senior-level advisor would provide guidance and advice on best practices not only to the IT Coordinator but also to the CAO, SLT and/or the Governance committee.

Taking advantage of organizations such as MISA Canada and MISA Prairies is also a good way of extending the reach for gaining knowledge and experience in implementing and managing technology in municipalities.

As a future consideration, contracting a CIO-level IT Advisor (also referred to as “Fractional CIO” or Virtual Chief Information Officer) role, even though a part-time and virtual role, could be focused on IT strategy and planning, contract management, and advising on proper infrastructure and business systems projects. The role would be a critical partner with SLT and not provide a support function. It will not only provide a cost-effective and strategic IT leadership role to Jasper, but the role will also provide an immediate positive impact on IT implementation and planning through tailored municipal expertise and access to a network of similar experts.

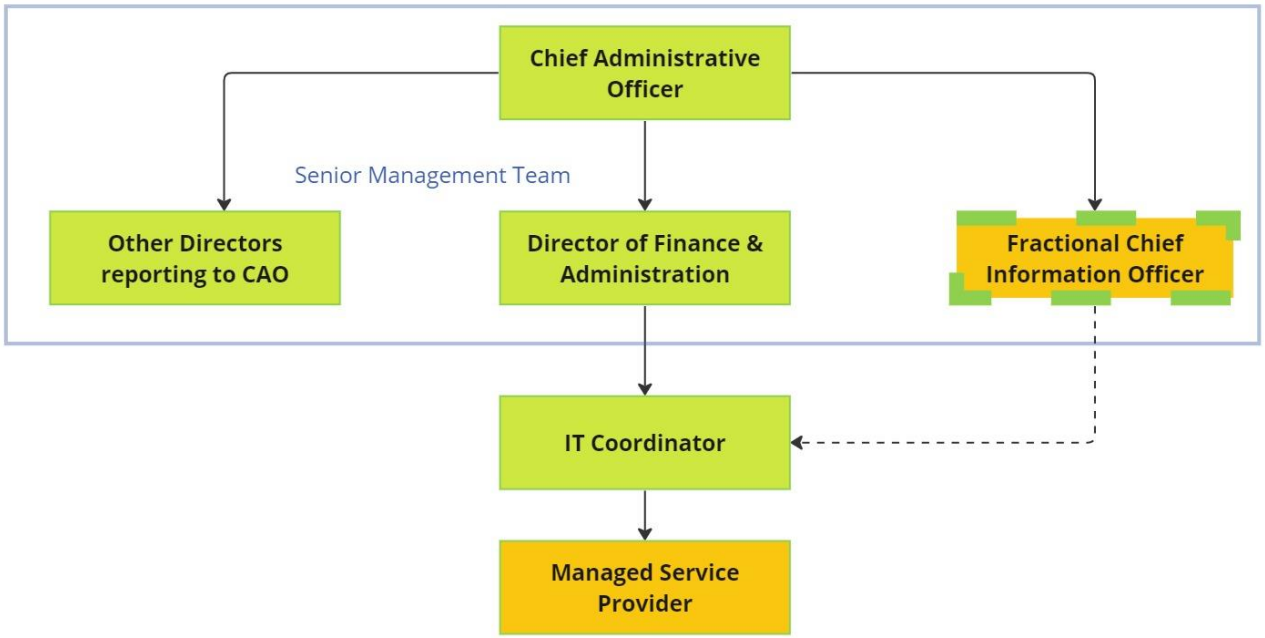

Figure 8: CIO-level IT Advisor (Fractional CIO) Proposed as part of SLT

The table below provides a brief summary of the key roles and responsibilities.

	IT Coordinator	IT Advisor (Fractional Chief Information Officer)	Managed Service Provider (MSP)
Employment Type	Full-Time Employee	Part-time Contractor	Fixed Services Contract
IT Management Services	**IT Functional Management** including IT Vendor / Contract Monitoring and Management, IT Policies Management, IT Operational Procurement, Business Relationship Management	**IT Strategic Management** including IT Strategy, IT Planning, IT Governance (Planning and Oversight), IT Portfolio Management, Strategic Contract Management, IT Performance / Metrics, IT Policies Advisory, Strategic Communications, Risk & Compliance Management	
IT Infrastructure Management		**IT Infrastructure Planning** including Network Planning, Lifecycle and Capacity Planning, overall IT Infrastructure Advisory services **IT Infrastructure Expert Services** including vulnerability assessment, vendor risk assessment	**IT Infrastructure Management** including Data Centre, Back-ups, Network Support, Network Monitoring, Threat Intelligence
IT Service Management	**IT Service Desk** including 1st level support, device management, mobility support	**IT Service Management** including Strategic Communications	**IT Service Management** including incident management, problem management, etc.
IT Client Services	**IT Client Services** including Knowledgebase Management, User Account Management, Software License Management		**IT Client Services** including Service Catalog Management, IT Asset Management

	IT Coordinator	IT Advisor (Fractional Chief Information Officer)	Managed Service Provider (MSP)
Business Solutions	**Business Solutions** including business systems upgrade, administration and modernization (in partnership with Business Departments)	**Business Solutions** including Business Solutions Modernization Roadmap and Long-term Planning	
Corporate Posture	**Corporate Posture execution services** including executing BCP/DR annual exercises, evaluate vendors on cloud-first capabilities	**Corporate Posture planning services** including Cloud Strategy Development, Incident Response Plan Development, BCP/DR Plan Development, security incident response plan	

Table 1: Detailed Roles and Responsibilities

4.4 IT Planning and Oversight Model

A key to success for the Municipality concerning technology is ensuring centralized and sound decision-making that works across all departments to ensure that value for money is being delivered on all technology investments.

This includes the proper planning and oversight where the IT projects are prioritized, resourced and funded. It also includes ensuring proper contract management is in place for delivery as well as standards and policies are developed. Lastly, it also includes training and education as part of the strategic technology planning.

IT Planning and Oversight, also referred to as Technology governance is a mainstay of successful organizations that understand that the strategic alignment of, and coordination between, business leaders and IT professionals will undoubtedly lead to better outcomes for not just the Municipality but also the Community at large.

Figure 9: Information Technology (IT) Governance

There are key areas of focus that should be considered through information technology governance, namely those that seek strategic alignment, value delivery, risk management, capacity/resource management and performance management/delivery. A simple IT Planning and Oversight model needs to be developed and implemented including:

- IT Steering Committee role that can be performed by the SLT
  - The Director of Finance & Administration and the IT Coordinator will lead the SLT to major decisions on IT systems and processes that align IT Workplan and Strategy to Corporate Priorities
- Project Intake and Prioritization group that primarily includes the Director of Finance & Administration and IT Coordinator (with possible assistance from the Senior IT Advisor on contract.)
  - The group will review major project requests such as system upgrades, new system purchases and other projects that would take considerable time and resources.

- Any organization only has a certain capacity to take on new projects on top of existing workloads, and so each request must be considered carefully. This would include value, risk, costs, and resources.

4.4.1 Project Prioritization Process

There will always be more technology work than can be accomplished by the Municipality. Even with optimal use of internal and external resources, prioritization is the key to ensuring that both funds and capacity are in place to support the ITMP.

Currently, business departments are taking care of their own technology projects, and they are not being centralized as requests to the IT Coordinator. IT needs to part of / leads the conversation around all technology projects. In the absence of such oversight that includes IT, key business operating procedures such as disaster recovery, business continuity, data protection, and security cannot be performed. The current model creates unnecessary corporate risks.

In the future, all departmental individual requests to support projects should be directed towards the IT Steering Committee. They will be assessed as to which are most important to the strategic priorities and overarching goals of the Municipality. As such a project prioritization process should be established to help guide IT and SLT in making these decisions.

There is a myriad of options to consider when developing prioritization criterion, including the use of allocating scoring to project proposals. That said, it may be wise to start with a more simplified approach and mature what works best over time.

The following template (shown below) could be used to group projects into four quadrants to help assess level of risk, cost, value, and effort (RCVE). Although these scoring factors are high level, they can still help to populate projects categorically, further indicating whether they should be avoided, considered, investigated, or prioritized.

Once each initiative is evaluated, ranked and placed on the RCVE it should help to make decisions about which to implement and where it should be positioned on the work plan:

- Quadrant 1: these issues should be avoided since they have high risk and cost, plus low value.
- Quadrant 2: these issues you may want to consider in the future as other more important ones are implemented first. Consider these a second phase since they may be low level enablers for other more important things to get done.

- Quadrant 3: these issues should be prioritized to get implemented since they have high value and effort but low cost and risk.
- Quadrant 4: these issues are high in all four decision criteria but should be investigated since the payback in time and effort maybe substantial to the organization.

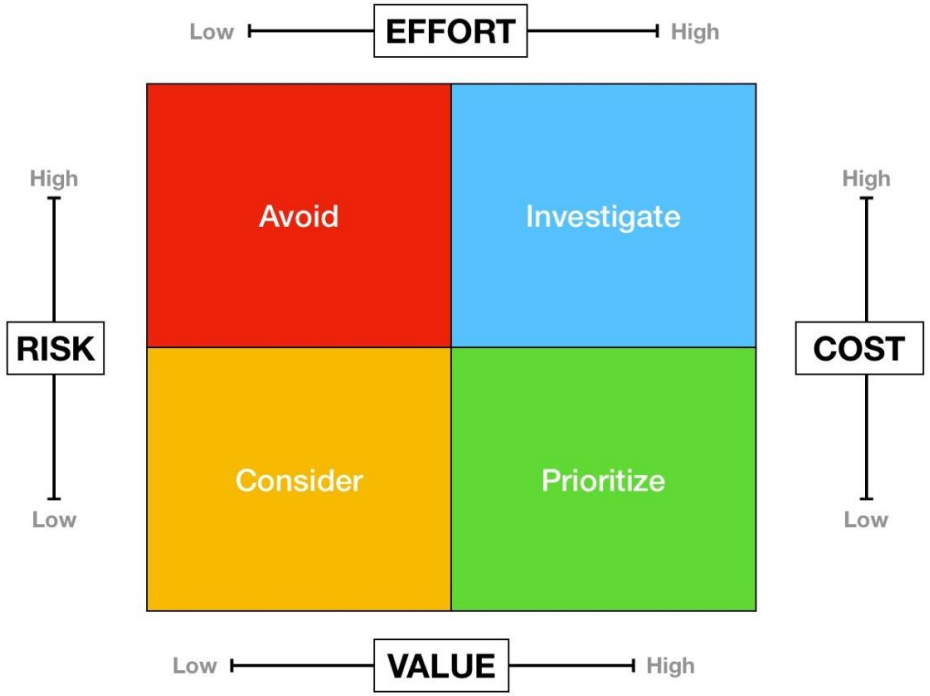

Figure 10: Sample Project Prioritization Approach

Again, prioritization tools range from the most simplistic to highly complex. What will be important for the SLT initially, will be to utilize some criterion to both quantitatively and qualitatively assess which projects should be approved and where they should be sequenced on the ITMP.

4.5 Third-Party IT Support

Managing technology, digital, data and all the underlying infrastructure is a big ask for small-size municipalities. They are having to rely more and more on automated, digital processes and innovative technology in their day-to-day administration; however, the pace of change in this sector is hard to keep up with. For example, IT systems require regular updates and Municipalities need to be up to speed or they risk falling behind, becoming vulnerable to system failures or cyberattack.

Working with a managed IT service provider is one of the best ways that municipalities can access technical expertise they need without having to maintain a full-fledged IT department. Currently the Municipality has a Time & Materials Contract with a Managed Service Provider.

At this stage, the Municipality needs to identify, select and build out a strong partnership with a capable Managed Service Provider. Based on our experience, this has been the most effective way for similar-sized municipalities to augment and support their technology team. Our recommendation is that the Municipality work towards procuring a formal services-based contract with a Managed Service Provider (MSP) on a go-forward basis.

Below are some typical services that are expected from the MSP:

- Managed Server and Data Centre related Services
- Managed Client Services
- Managed Information Security
- Managed Service Desk & Support
- Network Planning and Support
- Capacity Management
- Remote Access Provisioning
- Mobile Device Management (MDM)

The MSP will also be acting as an agent of the Municipality (as per the contract) to resolve system issues with vendors, to resolve connectivity issues with the Internet Service Provider (ISP).

Most importantly, the MSP contract will contain vendor's service level agreement (SLA) parameters and it's agreed upon minimum service level guarantee as well as compensation/penalty for failure to meet that guarantee. Also, the contract must include details of MSP's reporting requirements on a monthly, quarterly and/or annual basis.

In addition to the Managed Service Provider, the Municipality can leverage third-party vendors “as needed” for subject matter expertise in areas such as information security, threat intelligence, vulnerability assessment, business continuity, solution configuration, data migration etc. In these other third-party vendor contracts, IT needs to become a broker for the Municipality to ensure that the right contracts are in place for the right Municipal needs and that the vendors are held to their commitments around. The goal for IT is to build strategic partnerships with the existing and future vendors. This close partnerships will become an imperative for the Municipality to move forward in its IT Master Plan.

5.0 ITMP Programs of Work

This section details out the ITMP Programs of Work that have been designed with the concepts of building a strong infrastructure foundation that is scalable and secure along with a solid corporate posture through policies, frameworks and standards. These programs of work will form the basis of improving work efficiencies and enhancing public service delivery.

5.1 IT Infrastructure and Operations

The Municipality and all its departments depend on a strong technology infrastructure to support public services. As the backbone of Municipal operations, it is imperative to provide a reliable, secure, and responsive technology environment. Such a strong yet simplified physical and virtual technology infrastructure will support Municipality operations now and will prepare Jasper for the future.

5.1.1 IT Network and Connectivity

Build and maintain a strong, connectivity and Internet network that supports Municipal operations.

- Build redundancies. Improve the ability to recover from outages by building multiple routes to critical locations.
- Support new Municipal facilities. As new facilities are developed, build networks to support and promote better connectivity.
- Promote new fibre builds. Working in partnerships with other organizations within the Community Conduct ongoing maintenance so that we continue to provide a high-quality fibre network.

5.1.2 Infrastructure Modernization

Renew the technologies we support according to industry and operational standards.

- Maintain sustainable hardware lifecycles. Monitor hardware warranties and replace equipment proactively.
- Decommission legacy systems. Replace aging software with modern solutions.
- Leverage MSP and/or Cloud Services to increase server and storage capacity. Improve retention, redundancy, and recovery of Municipal infrastructure.

5.1.3 Phone System Replacement

The current telephony system does not meet the current as well as future needs of the Municipality. A new system is needed that will allow mobile connectivity and the transmission of voicemail to email to reduce calling in for messages. This will, at the same time, provide a higher level of first-time connectivity.

Once connectivity constraints have been eliminated, the Municipality should consider a Cloud solution; however, the total cost of ownership should be considered while determining the future phone system for the Municipality. When considering a cloud solution for the telephony system, the Municipality may also align with the M365 plan and leverage the existing M365 platform.

5.1.4 Incident Management

Follow ITIL best practices to grow the Incident Management processes and minimize service downtime for employees (internal customers).

- Quickly identify incidents. Identify incidents as quickly as possible using automated technologies and monitoring tools.
- Log and categorize incidents. Log all incidents using classification and prioritization frameworks to ensure complete historical records.
- Perform initial investigation of incidents and diagnose the problem. Immediately investigate incidents to understand the incident scope and appropriate course of action for mitigation.
- Make assignments or escalate the issue to mitigate incidents. Develop an Incident Management chain of command to delegate tasks and escalate issues as needed, allowing staff to work quickly and effectively.
- Facilitate resolutions and perform testing. Implement incident resolutions and test all services and systems thoroughly to ensure service recovery.

5.1.5 Business Continuity and Disaster Recovery

Support the continuity of Municipality technology and business operations in the event of a disaster.

- Perform a Business Impact Analysis (BIA) to identify all core services delivered by each department. This will include determining the impact of a disruption and the recovery time objectives (RTO) for each service.
- Conduct an IT Risk Assessment to identify and analyze risks to the delivery of Municipal services.
- Define Business Continuity (BC) roles and responsibilities within a Business Continuity policy.

- Develop a Disaster Recovery Plan (DRP) based on the output from the above activities. Work with departments to identify vital systems and develop plans to maintain operations. It is important to note here that the DRP will incorporate data/system backup policies, standards, and procedures.
- Develop supporting processes – Incident Response Plan, Crisis Management Plan, Tabletop Exercise Program
- Procure Disaster Recovery as a Service from a qualified vendor or the MSP.
- Ensure BCP pre-requisites are in place such automated and continuous hardware and software inventory tools that also patch all devices / software. Also, network diagrams and server dependencies are needed.

On an ongoing basis, the IT Coordinator (in conjunction with SLT or a designate responsible for business continuity) has to:

- Maintain a priority list of critical technical services. Work with SLT to prioritize vital systems and develop plans to maintain operations.
- Maintain a technology infrastructure that supports continuous Municipal operations. Align IT infrastructure and operations with the Business Continuity Plan

5.1.6 Redesign Backup Process

While the BCP/DR plan is being developed by the Municipality, it is important to focus early on the redesign of the back-up process, it is recommended that the Municipality.

- Complete data clean up and removal as a pre-requisite to redesigning back-up systems and processes,
- Upgrade and centralize all back-up systems to Firehall.
- For those that cannot be centralized to Firehall, identify a suitable backup location which may include cloud services.
- As part of Cloud Strategy and M365 implementation, back-up cloud hosted server and M365 data to immutable cloud storage service.

5.2 Cloud Framework and Technologies

Increase the flexibility, sustainability, and uptime by shifting to a cloud-first strategy.

- A Cloud Framework with supporting policies should be created that will govern the use and appropriateness of Cloud services.
- Conduct a cloud readiness assessment. Migrate select systems to cloud-based solutions.

- Support API development. Build connections between on-premises and hosted solutions.
- Leverage Software-as-a-Service. Develop a strategy for purchasing and implementing cloud-based solutions.
- Be strategic about budgeting. Analyze long-term budget impacts and leverage potential cost savings.

5.2.1 Purpose of a Cloud Computing Framework

A Cloud Computing Framework is a strategic artifact that will provide direction for a holistic view of Cloud adoption at the Municipality. Cloud Computing provides the capability to innovate, reduce capital and operating costs, scale and respond to the evolving growth and demands of the Community and the Municipality that is typically challenged via on-premise environments.

A Cloud Computing Framework will enable the Municipality to provide oversight of the enterprise-wide adoption of on-demand Cloud services for Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS) through governance, compliance, and security. A strategic framework will facilitate overall technological transformation by:

- Utilizing the Cloud to improve efficiency and effectiveness.
- Increasing business agility and responsiveness to citizens' desired outcomes in Today's digital world.
- Supporting technology innovation.

5.3 IT Policies and Standards

Consistent with the commentary throughout this section, many of the decisions related to technology are business or management decisions. These are not decisions to be made by IT alone on behalf of the corporation. For example:

- Which employees get smartphones?
- Who can buy new technology?
- Can a member of staff use their personal phone at work?
- Who is authorized to register a web domain for the Municipality?
- How are staff allowed to use ChatGPT at work?
- Which websites can staff access, and should that activity be tracked?
- What content is saved when an employee retires?

- How much space does an employee have in email?
- Which systems need to be up and running first in the event of a disaster?
- How secure do we need to be?

For each of these decisions, several factors need to be weighed including business impacts, employee impacts, cost implications and most importantly, corporate risks assessment.

Typically, IT recommendations and policy should flow from IT, through the Director of Finance & Administration and if necessary to SLT for final approval. Council will retain responsibility for budget approval, is the final authority for municipal spending decisions and must approve Municipal policies in accordance with current practices.

Policies and standards should establish the parameters within which the Municipality uses technology and create clear expectations for those who use and manage technology. Conceptually, policies should balance empowerment with control. Policies and standards should clearly define roles, responsibilities, and accountabilities.

5.3.1 IT Policy Framework

The Municipality is in clear need to an IT Policy Framework. A standard IT Policy Framework typically addresses the following areas:

- Acceptable Use – Provides the parameters, obligations and responsibilities associated with access to and use of municipal technology.
- IT Security – Defines how the Municipality (as a whole) operates a secure and reliable technology environment, with adequate controls to protect the Municipality's information assets.
- Third-Party Access – Defines how third parties should access the Municipality's network in a secure manner.
- Backup, Recovery, Business Continuity and Disaster Recovery – Defines the backup and recovery plans for computer systems that store Municipal data. This policy is also designed to prevent the loss of data and systems in the event of an equipment failure or destruction or security incident.
- IT Procurement Processes – Defines roles and responsibilities and processes for procuring technology solutions.
- Asset Lifecycle Management – Ensures effective procurement, maintenance and operation and replacement of IT Assets to ensure delivery of consistent, efficient, reliable, timely and cost-effective services for employees and the community.
- Hosted and Cloud Solutions – Defines the Municipality's position with regard to Cloud computing and the due diligence required before procurement of Cloud solutions.

- Data Management (Lifecycle, Privacy) – Ensures that the corporation can effectively manage its data assets while complying with required legislation.

The IT Coordinator with the input of staff and managed across the organization should create policies within the corporate IT Policy Framework and ensure that it accurately reflects how the Municipality wishes to use and manage technology.

Policies will be developed with business unit and IT Governance involvement, and approval will follow the standard corporate policy development process.

IT Steering Committee should consider and adopt a phased approach to policy development. Phase 1 should focus strictly on core policies such as IT Use Policy, Information Security Policy and IT Procurements. Phase 1 should also focus on IT Governance with establishing regular review periods and allowing responsibility to policy owners. Phase 2 should likely focus on other policies such as Hosted and Cloud Solutions, Asset Lifecycle Management, Data Management and BCP/DR policies.

5.4 IT Security

A secure technology environment allows the Municipality to operate safely and efficiently. By centring the ITMP work on security, the Municipality will proactively protect its resources from evolving cybersecurity threats. All Municipal staff are the first line of defence in protecting the security infrastructure. There is a constant need to continue training the Municipality's workforce to recognize and respond to cybersecurity threats. Ongoing collaboration ensures all Municipal data and systems remain protected and creates interconnected enterprise solutions that all Municipal employees can use.

5.4.1 Security Infrastructure

Develop and maintain a secure foundation for Municipal operations.

- Strengthen layered security. Maintain multiple levels of security across the systems. Be proactive in seeking out opportunities to improve systems and procedures.
- Stay current with security patches. Ensure that security updates are installed when they are released. Automate patch management.
- Evaluate new technologies for security compliance. Ensure that third-party software follows security standards and best practices for privacy, encryption, and other security concerns.

5.4.2 Audits & Assessments

Continue to regularly evaluate the systems to ensure a secure environment.

- Conduct comprehensive annual cybersecurity assessments. Identify and address vulnerabilities rapidly.
- Conduct ongoing security reviews. Review log reports to identify and correct any potential issues.
- Regularly audit all online systems including services provided by the MSP. Ensure all security best practices are followed on all systems.
- Follow recommendations from financial, technical, and security audits. Maintain required certifications to support Municipal operations.

5.4.3 Vulnerability Management

Vulnerabilities appear almost daily, and the Municipality should always understand what vulnerabilities exist, the risk or threat they present, and have a plan to mitigate that risk. The Vulnerability Management program should consist of:

- A weekly vulnerability scan of the complete network using a tool such as Nessus or leverage your Endpoint Detection & Response solution (EDR/XDR).
- An annual third-party penetration test that discovers internal and external vulnerabilities
- A procedure to address each identified vulnerability in a prioritized manner.
- The IT Governance Committee is held accountable for the ongoing vulnerability assessment.

5.4.4 Security Policies

Maintain policies and processes that support secure Municipal operations.

- Strengthen incident response. Continue to develop an Incident Response Plan and conduct regular drills.
- Follow the Principle of Least Privilege. Grant users minimal access rights needed to accomplish tasks.
- Review and update password policy based on current best practices. Establish expectations for password management and security. Implement password management software.
- Protect privacy and sensitive data. Set standards for designating private datasets and for de-identifying sensitive data. Earn the public's trust by protecting their privacy.

- Ensure privileged accounts are used appropriately by having users switch to normal accounts when elevated privileges are not required. Implement Multi-Factor Authentication for privileged accounts and include special training for such account holders.

Security Incident Response Plan

- Develop and implement a Security Incident Response Plan: where the Municipality understands the roles and responsibilities of both IT and the business departments in the event of a major security incident. This is a service that can be provided by a contracted IT Advisor or the Managed Service Provider.

5.4.5 Education

Create a first line of defence by developing an educated and prepared workforce.

- Invest in Information Security staff awareness and education as a service. Support rigorous, ongoing security awareness and education on current standards, threats, and best practices.
- Train staff to recognize and report potential attacks. Conduct mandatory, bi-annual security training for all employees.
- Inform internal and external users about cybersecurity via an outreach program. Use monthly cybersecurity newsletters, the employee intranet, and recorded presentations to continue educating staff, contractors and even customers to recognize and respond to cybersecurity threats.

5.4.6 Network Monitoring/SIEM/Intrusion Detection

Procure and implement a tool for monitoring network activity and logging. Alternatively, the Municipality can include this is a service provided by the MSP. Regardless, some kind of monitoring tool and logging solution should be put in place to monitor networks for anomalous behaviour.

5.4.7 Threat Intelligence

Subscribe to multiple Threat Intelligence Sources. There are many organizations who monitor threats and report them daily. They provide valuable information on what is ‘in the wild’ and the Municipality should take advantage of this directly or through the MSP.

5.4.8 Vendor Risk Management

Develop and implement a program to regularly assess the risks presented by 3rd-party hardware, system and solution vendors: The supply chain in some cases can be a weak link in a Municipality's security. An internal or external risk assessment should be performed on major vendors and ideally should be conducted on an annual basis.

5.5 Records and Information Management

The discovery process has revealed that file management including naming, versioning, sharing and collaboration, tracking changes and compilation of final versions is problematic due to lack of standards, policies and tools. There are also issues with email management including sheer overload, lack of space, and finding and recovering emails when needed.

It is recommended to conduct a service review of the Municipality's Corporate Records and Information Management (RIM) systems. The objective of such a review is to evaluate Jasper's physical and electronic records to identify strategies and processes to optimize software platforms, integrate applications and digitize manual paper process to improve overall service delivery and efficiency. The review will identify:

- The current state of the Jasper's physical and electronic records, email, data and applicable information software systems including policies, procedures and general practices to provide an overall framework for improving service delivery
- Gaps in the Municipality's records management system and make actionable recommendations for the selection and implementation of essential technology solutions and digitization projects
- Actionable recommendations for the Municipality to maximize value from its current and future technological investments
- Implementation plan on actionable recommendations.

5.5.1 Information Management Technology Platform

In alignment with the Records and Information Management Review (assessment) work, it is recommended that the Municipality subscribe and implement Microsoft 365 (M365) cloud-based services. This will allow the Municipality to reduce its infrastructure maintenance costs in the long run, be more scalable as it grows and unlock new benefits for the staff and the community.

The M365 platform offers a suite of new tools and services that will provide the ability for the Municipality and its staff to:

- Share, manage and access information from almost any device (device agnostic tool).
- Store and protect files, share them with others.
- Empower teamwork by collaborating easily across the Municipality as well as with customers, clients, and community partners.
- Build internal websites (intranets), create pages and offer news ways to communicate and provide organizational news and updates.
- Provision information management capabilities to classify documents, identify information sensitivity and ensure legislative compliance for proper retention.
- Prevent the loss of important data and documents.
- Enable search for documents, messages, conversations, and people.

Acknowledging that M365 is a large and complex platform, it is recommended that the Municipality team up with a Microsoft Partner (a MS Service provider) that has the experience in assessing and contracting Microsoft Licensing Agreements. The Partner will also be crucial in establishing M365 foundational architecture and framework for Jasper and its information management considerations.

Below is a sample plan M365 subscription plan referred to as M365 E3 that Municipality may be considering for its office-based / desk-based staff. M365 E3 plan, as an example, includes Windows 11, Office 365, related security and mobility as productivity applications such as Teams and SharePoint. With Azure Active Directory (AD) Premium and Multi-Factor Authentication (MFA), the Municipality's security will continue to be robust.

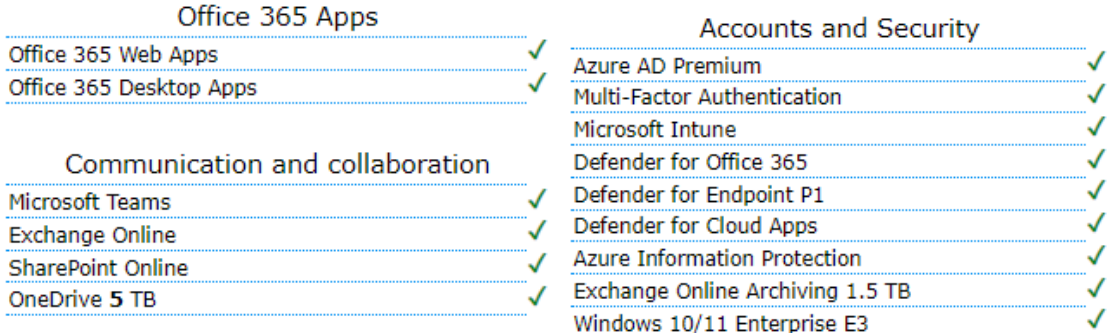

Figure 11:M365 E3 Plan as a Sample

It is recommended that the M365 Platform Implementation be considered in following three prioritized phases. With Phase 2 and 3 more aligned with the Records and Information Management Review. It is recommended:

- In phase 1, the Municipality migrates from on-premise instance of Exchange to a Canadian data-centre hosted instance of Exchange Online. Working with the partner, support should be provided to end-users on their transition to Exchange Online and training to the IT Coordinator to support Exchange Online administration in addition to MSP. It is an optimal entry point for municipalities to leverage Microsoft's suite of business productivity Cloud offerings, i.e., email first followed by MSOffice (Word, Excel, PowerPoint, etc.). Through this switch, not only is there a reduction in IT spend but there is an improvement in overall uptime and more optimal email usage.
- In phase 2, the Municipality emphasizes on collaboration among staff and with the community at large by implementing MS Teams. This will provide the Municipality with a tool that seamlessly promotes cross departmental collaboration on tasks and projects. It will also provide opportunities for the Municipal staff to engage with external parties (other government agencies, customers, and partners.) Through proper training and support tools, staff will be able to share documents, send instant messages and hold online meetings. This phase will include training for staff, power users and administrators to ensure proper usage and adoption of the platform.
- In phase 3, the Municipality provisions more information management capabilities of M365 by implementing SharePoint Online. SharePoint will allow staff to share, co-author on documents, information and knowledge. It will also allow the Municipality to build an internal website (Intranet) with employee self-service pages and innovative ways of providing organizational information including training to staff.

5.5.2 Data Classification Standard

The proliferation of unstructured data has presented a challenge for the Municipality which is in custody of sensitive information in the form of emails, spreadsheets and documents housed within various business solutions and file shares both within and outside the Municipal network. In Municipalities, this data is quite often moved to the Cloud prior to setting policies (and automated controls) to formally identify and categorize information to ensure it is handled appropriately. This struggle with data lifecycle often results in the storing of sensitive data long after it's useful, creating an unnecessary exposure to risk.

As data is created and archived on various platforms (either on-prem or in the Cloud) on a daily basis, much of it can be forgotten and simply stored in perpetuity without adequate controls in place.

Having information classified makes it easier to inform the configuration of technology systems to protect the municipality's sensitive data. It also makes it easier to establish standards, access privileges and rules to support staff in collecting and distributing municipal information.

The Municipality should establish a Data Classification Standard to better define the sensitivity of information regularly managed throughout (and beyond) Jasper.

This classification exercise does not need to be complicated. It could begin with a half day brainstorming session and using standard corporate reporting materials as reference tools to understand and set sensitivity thresholds. Sample categories for data/documentation classification are illustrated in the diagram.

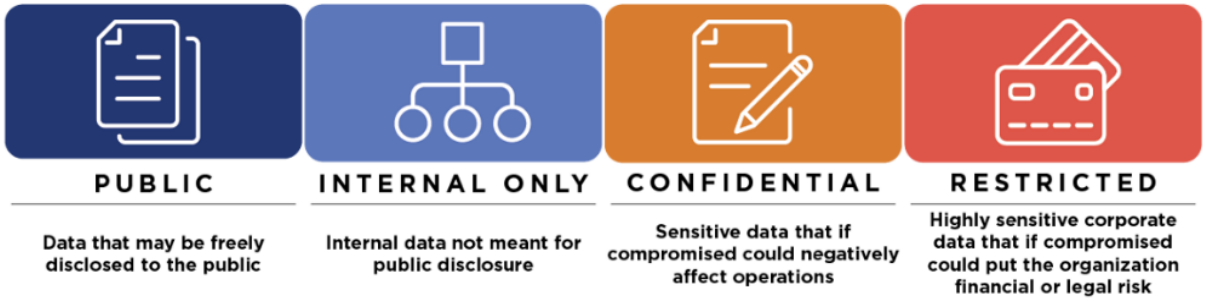

Figure 12: Sample Information Security Classification Framework

Such a standard will guide the Municipality in making better decisions to protect unauthorized access to sensitive data and safeguard personal information collected from residents. For example, this model could be used as a lens with which to review terms and conditions related to data management when contracting with Cloud service providers.

Since data is a critical municipal asset, this investment to develop a data classification standard will help the Municipality in better managing its critical asset.

5.6 Business Solutions Modernization

Technology transformation requires a “people, process then technology” lens in order to take shape. Layering technology over poor processes or without the resources in place will not deliver value or be sustainable over time.

Failed implementations create conditions where staff avoid the use of new systems and tools or develop workarounds to use them in non-standardized ways. This leads to inefficiencies, inaccurate data / reporting and, in many cases, will be entirely antithetical to the goals of technology automation and enablement.

During our consultations with business departments as well as in the staff satisfaction survey, multiple examples of low or poor solution utilization were identified. These included both back-end (staff used) and front-end (customer-facing) systems. A few noteworthy examples are WorkTech, MaintainX, Diamond, Smart Lists, Univerus, WorkHub, Bang the Table, Voyent.

The Municipality has done well by implementing and using several key business solutions to help automate and improve services (e.g., FirePro, ESRI, Diamond).

All existing solutions present opportunities to align people and processes to help take more advantage of these investments. This will allow to further automate administrative tasks and generate useful information to support operational improvements.

It is important to note here that the initiatives listed below may require the Municipality to either have the Solutions Analyst role in place and/or have a contracted business analyst/project manager resource to provide business analysis, systems analysis and project management functions. Also, the Municipality has to ensure that the corporate posture and infrastructure foundations are in place, before moving fully-fledged into solution modernization.

Once the above pre-requisites have been met, it is recommended that IT start working with the business departments and vendors to identify and plan for 1-2 projects per year to improve utilization and adoption of existing business solutions.

It is recommended that the Municipality starts with the following initiatives that can be considered quick wins with the business departments:

- Establish a 3-party vendor support to better support and leverage current ERP (GP/Diamond) system.
- Assess current CMMS/Work Management system (MaintainX) to determine if it can meet future needs of the business department users.
- Evaluation of WorkHub Usage. Determine the current usage and pain-points with WorkHub and determine a go-forward plan to upgrade, replace or retrain the solution.
- End-to-end process optimization and Diamond implementation for Accounts Payable Processes.
- Investigate opportunity to integrate Univerus booking system with ERP Diamond to support automated payment reconciliations.

Post, some of the quick wins mentioned above, it is recommended that the Municipality further digitize and automate other critical processes. Some of these may require acquiring and implementing new business solutions. Some noteworthy digitization opportunities are:

- End-to-end process optimization and business solution investigation and implementation of a Cemetery System to digitize all paper records and automated processes.
- Automate time & attendance management as well as payroll processes. This may involve utilizing the existing HRISMyWay system or a new tool that integrates with this system and/or Diamond.
- Post Records and Information Management review, acquire and implement an Electronic Documents and Record Management System (EDRMS) and automate all aspects of records and documents lifecycle.
- Post orchestration of Corporate Asset Management Strategy and long-term Asset Management plan, develop the roadmap for Asset Management Solution including acquisition, implementation, integration with other system, such as GIS.
- End-to-end process optimization and business solution investigation and implementation for Inventory Management System including support hardware (such as RFID tags, barcode scanners, etc.).
- End-to-end process optimization and business solution investigation and implementation for business licenses and permits including online portal for easy customer license/permit applications.

The following chart provides an indication of the recommended timeline for these opportunities. This timeline considers necessary prerequisites as well as staff capacity.

Business Solutions Roadmap		Years						Milestones/Key Deliverables/Comments
Task	**Activities**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	
0.0	Establish Core Infrastructure and Connectivity							
0.1	Hire Solutions Analyst Position							
0.2	Hire a virtual CIO-level IT Advisor							To advise on doing right projects at the right time
1.0	Establish Business Solutions Needs/Ideas List							For Year 2027 and beyond*
2.0	MS Teams Implementation							Part of Move to MS365 - Phase 2
3.0	Records and Information Management Review							To optimize platforms (M365) and existing solutions
4.0	Cloud Strategy and Roadmap Development							
5.0	Implementing SharePoint Online							
6.0	Establish 3rd Party Vendor Support for current ERP							Great Plains/Diamond Support
7.0	MaintainX Enhancement/Replacement Assessment							Current Work Order Management System
8.0	WorkHub Enhancement/Replacement Assessment							Current HR Health & Safety Solution
9.0	Accounts Payable Process Review and Solution Assessment							Utilize Diamond or need new AP solution
10.0	Establish Business Solutions Needs/Ideas List							For year 2028 and beyond*
11.0	Asset Management System - Discovery, Acquisition, Implementation							
12.0	Cemetery System - Discovery, Acquisition, Implementation							
13.0	Establish Business Solutions Needs/Ideas List							For year 2029 and beyond*
14.0	Bus Solution X - Discovery, Acquisition, Implementation							Based on needs/ideas evaluation, e.g. Licensing and Permits*
15.0	Bus Solution Y - Discovery, Acquisition, Implementation							Based on needs/ideas evaluation, e.g. Time & Attendance and Payroll*
	*Besides the Business Solutions projects listed in the roadmap, other possible implementations could include fleet/fuel management, transit management, facilities management, taxations, council agenda management, waste management							

6.0 Other Opportunities

As Jasper implemented the ITMP Programs of Work from the previous section, the overall IT Infrastructure foundations will be established, and a mature corporate posture will start building. All this will lead to the Municipality becoming ready to take advantage of the opportunities laid out in this section.

6.1 Technology Training

Lack of training around technology solutions is currently a huge risk for the Municipality. Throughout our engagement, staff have raised concerns that they are unaware of technologies available to them and that there is a lack of education on how best to use the technologies. Also, in the survey and during interviews, staff expressed their need for training and education support in either configuring or using the solutions made available to them.

If users are untrained on optimal use of systems, it will undoubtedly lead to data accuracy concerns, poor reporting and a lack of utilizing key features. Training should be budgeted as a component of technology implementation projects, to ensure that net new software is used correctly from the onset. This creates good behaviours on the part of users and makes subsequent training much easier to deliver.

The consultants recommend that all future business solution implementations should include as part of their evaluation process, an assessment of the quality and availability of training offered by the vendor / implementer both during the implementation as well as ongoing training.

As part of the ITMP, the IT Coordinator working closely with the solution vendors and business departments needs to understand the training and education needs for both existing and new solutions. There are various training models available (e.g., in person, vendor led, train-the-trainer, online, Learning Management System (LMS)) and each should be considered based on the employee needs, functionality available and their cost effectiveness. Many offers pre-loaded content that can be used immediately along with an opportunity to customize and record Municipality specific training modules to staff.

The IT Coordinator working closely with the Human Resources Manager should create an organizational training plan to deliver technology-focused training to staff. At a minimum, the plan should focus on delivering technology-focused when new staff are onboarded. When employees are onboarded, they should receive training on corporate systems and through refresher training that can be coordinated periodically to align with demand.

Training should also be budgeted as part of any project that introduces new technology tools and solutions. The Municipality would be well served in aligning this training with the corporate budget funding model to ensure that it is prioritized along with other offerings.

Collaboration is the key to understanding organizational requirements surrounding training. Consideration of the program should be coordinated by the IT Coordinator with close partnership with business departments and advise from the SLT.

6.2 GIS Strategy

Parks Canada has an ESRI Enterprise License Agreement (ELA), which provides a shared usage agreement for the Municipality. Also, Parks Canada has a GIS resource that is shared with the Municipality. However, the Municipality feels like they get a lower priority compared to other Parks tasks. Conversations should be had with Parks Canada to identify ways for the Municipality to expand the use of GIS. Our recommendation is for the Municipality to update their Memorandum of Understanding to a more robust Service Level Agreement with Parks Canada to allow for greater access to GIS services and solutions. It would be helpful if the GIS resource could provide an annual report of projects, both completed and underway, to the Municipality as an update.

In discussions with the GIS contact, it became clear that there is some confusion about priority setting for the municipality since different people can make requests as needed. The proposed IT Steering Committee should provide some direction for requests, but consideration should be given to a single point of contact from the Municipality to help with the prioritization of workload.

GIS systems, like ESRI, are quickly becoming a “single source of truth” for municipalities to use in order to manage their asset and property address information and provide key linkages to other systems relying on property and spatial data. Identifying someone within the Municipality to fully manage this relationship and lead the work could help leverage the opportunities and services.

Our recommendation is that the Municipality must continue adding assets into GIS inventory and in order to overcome these information gaps in GIS, the Municipality can hire a GIS student or new graduate on a temporary basis to work with the Jasper Parks GIS resource.

Currently, the asset inventory on GIS is utilized by existing field staff. The Municipality, post completing the first version of Asset Inventory in GIS, can start developing GIS tools and services (e.g., self-service map builder, GeoHub, storyboards and dashboards). These tools and services can be used to build portal maps and provide more interactive maps to the citizens as opposed to Today’s static maps.

The ESRI platform provides opportunities to develop ArcGIS Geo-Hubs to better integrate business solutions used by the Municipality (for example Maintenance Management Systems), improve critical data (between Municipality and the public), develop more GIS mapping tools for field staff, create dashboards and maps for staff and so on.

6.3 Digital Vision Adoption

Once some progress with ITMP takes shape, more thought should be given to establishing a focused vision around **digital** – a commitment to fully leverage technology to make work easier for staff and deliver better value to the citizens and the community.

The UK Ministry for Housing, Communities and Local Government (MHCLG) along with the Government Digital Service and a collection of local authorities and sector bodies established a Digital Declaration. This co-authored document provides for many of the notions expressed in this document and, to date, over 200 municipalities have adopted and signed it. It serves as a catalyst and guide for these organizations to continue expressing their beliefs and commitment to radically improving customer service and workforce productivity.

Through SLT, Jasper should consider adopting their own digital vision that establishes a standard across the organization, making clear the overall goals for technology and digital transformation.

Although establishing a Digital Vision seems like it should be a task that leads off the ITMP Work Plan, it is intentionally sequenced as a 2024/2025 action to align with the expansion of the IT model and further learnings through key solution utilizations. Consideration as to the timing of this action should be considered further by SLT.

In the future, as the Municipality moves more consciously towards delivering mature digital experiences to its customers, it is recommended that it starts with the following activities:

- Establish digital service standard and customer experience standard (for non-digital) services. Standards help to define what good digital, or customer service practice looks like and the process we will use to develop such services. This will create consistent user experiences and increase delivery effectiveness for customers and staff.
- Curate a list of all service offerings currently offered to its customers (residents, businesses, visitors and others) and also note the level of digitization. Notation should also be made as to which platform is being used to deliver the service (if already fully or partially digitized). The digitization index of services can be used to track current state and plan annual improvements each year.
- Develop Customer Experience (Digital) roadmap to identify prioritized services to transform experiences. Transformation could start with conversion of PDF and paper forms to e-Forms.

6.4 Internet Connectivity Strategy

Some areas of the community in Jasper including Municipal buildings have limited and/or poor Internet connectivity options. As suggested earlier in this document, the Municipality should work collaboratively with MUSH (Municipalities Universities, Schools and Hospitals) as well as the private-sector businesses in and around Jasper to determine what the community's needs are, evaluate the options available to meet those needs, and determine the right model for the Municipality to improve connectivity options. Options may include directly provisioning connectivity services, partnering with private sector partners to invest in improved services, working with Alberta SuperNet and other parties, or directly stimulating the market to provide better options; or a combination of all of the above.

The recommendation is to develop an Internet Connectivity Strategy to evaluate the needs of the community based on available Internet/connectivity information, review and evaluate options, and make a recommendation to the SLT on the go-forward strategy and operating model. The biggest advantage of such a collaboration among organizations from different sectors is ability to conduct a joint procurement for Internet Services.

6.5 IT Service Management (ITSM)

Once the Municipality has started growing its incident management processes, the next step is to invest in a proper IT Service Management system that provides the following functionality in addition to incident management.

- Incident/Problem Management - Helps track and manage unplanned events or service interruptions and help restore the service to its normal state at the earliest.
- Change Management – Helps implement or enable changes while minimizing the impact of those changes on IT service delivery.
- Knowledge Base – Helps create, share, update, and access knowledge regardless of location.
- Asset Management - Helps ensure that all IT assets are maintained over time, understand which assets are in demand and which existing ones need replacement.
- Reporting (Metrics/Trending) – Helps with reporting which leads to better analysis and decision making.

ITIL-based IT Service Management approach and system will help position IT as an enabler of digital transformation. This approach is where IT and business teams work closely together to help the ITSM address the business's needs.

6.6 Consistent Customer Experiences

The need for expansion in digital services for customers reflects the fact that expectations and uses are changing with a growing population that simply prefers to interact using the smartphone or the web. Many citizens and business services are online today, such as recreation program registration, Bang the Table and Voyent Alert. Many more services are candidates for future digitized services.

A consistent approach to customer service – handling customer feedback, permit/license applications, payments – could be a strong unifying program that establishes common infrastructure, systems, processes, and practices across the Municipality.

Post adopting a Digital Vision, our recommendation is that the Municipality commits to enhancing and expanding the customer service offerings. Some initiatives that can help move forward in this direction are:

- Develop corporate-level processes and procedures to increase adoption of following customer-facing solutions: Bang the Table and Voyent Alert.
- Implement online payments system. This involves a complete end-to-end service modernization including electronic invoice issuance, online ability to make payment and bank reconciliation.
- Library of Things Improvements. The current “item rental” process is confusing to users through the current booking system. Streamlining and standardization of library of things solution using customer feedback and process optimization.

6.7 Industrial Internet of Things (IIoT), Sensors, Controls and Monitoring

Internet of things / industrial internet of things continues to grow in importance to all municipalities. Their use in SCADA, Utility Management, Traffic Management and Transit Management Systems is common and nowadays considered core to the operation of their respective services areas.

As the Municipality’s data, digital and technology systems mature and as the Municipality grows, there are numerous areas that the Municipality can investigate in and conduct pilots with the support of the IT team. These include but are not limited to transit safety technology, Self-diagnosing streetlights, road deficiency optical sensors, road weather information systems (RWIS) infrastructure.

7.0 Work Plan

Provided under separate cover

8.0 Conclusion and Next Steps

Given the current state, there is massive potential for the Municipality of Jasper to use technology to drive major efficiency and productivity improvements, to realize significant improvements to customer experiences, and to improve staff experiences.

The recommendations made in the Master plan represent a significant course change, pushing the IT program forward, realigning responsibilities for clearer accountability, and making significant investments in staffing and new technology.

Investments in technology, when done right, can deliver tremendous efficiency gains and there are many of these opportunities across almost every department.

But, when done poorly, they are often not fully implemented, cause frustration, reduce staff morale, can create more inflexibility and lead to increased inefficiency, rather than the hoped-for efficiencies

It is important that Council and staff better understand how information technology is linked to the effectiveness of the organization. Council must be kept better informed about the overall roadmap and better educated on how specific initiatives will contribute to improved outcomes for customers and for departments. An annual report providing an update on the status of the ITMP implementation is recommended.

The following is a summary of key actions and recommendations designed to unlock value and support change at Jasper:

- Constitute an IT Steering Committee to coordinate and align technology decision-making, priorities, investments and efforts more effectively.
- Move the IT Coordinator position to a full-time role to provide leadership, coordination, enhance technology management and ensure the organization fully utilizes technology.
- Retain an external IT Managed Service Provider to support IT infrastructure and networking needs, deliver help desk support services, manage procurement and licensing in addition to supporting some project work.
- Establish technology standards and policies to ensure secure, strong connectivity and Internet network that supports Municipal operations.
- Adopt cloud solutions as a preferred model and move to M365 to fully support remote collaboration, communication, and information sharing.

- Continue to regularly evaluate the systems to ensure a secure environment and develop and maintain a secure foundation for Municipal operations.
- Build on the existing Business Solutions that present further opportunities to align people and process to help take more advantage of these investments.
- Explore other opportunities such as determining how to better leverage GIS data and tools, undertake a Records and Information Management Review, consider how to digitize more business processes to improve service delivery, and continue to modernize the business solutions to be able to take advantage of emerging technologies.

By considering the various recommendations in this IT Master Plan and delivering on the proposed workplan, the Municipality will exponentially grow its capabilities to make work easier and more efficient for staff, improve the user experiences and mitigate future risk. It so this work will require additional investment in technology above current levels. That said, these investments will radically transform the current state leading to a more modern approach to service delivery and operations in general. This, in turn, will lead to a more connected and engaged workforce with more time to focus on improving service delivery.

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