TOWN OF HALTON HILLS

Corporate Technology Strategic Plan

Final Report

July 9, 2018

Perry Group Consulting Ltd.

Version Control

Version	Prepared By	For	Date	Comments
0.1	Ben Perry	M. Colquhoun	May 31, 2018	First draft
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Executive Summary

The Importance of Technology

Well-run municipalities rely on technology to be effective, increase the productivity and efficiency of their staff, and deliver services that satisfy customers with their simplicity and convenience.

This approach aligns with Council's first strategic priority: *Municipal Service Delivery - effective, efficient and economical delivery of the Town's existing services.* Quite simply, the Town cannot be effective, efficient and economical without fully leveraging technology. While technology has historically been more of a back-room function, it is now an essential part of running municipal operations, and as such, the Town is ready to move forward in recognizing the essential role technology plays. Other municipalities are also investing in technology to deliver enhanced customer service, provide more efficient mobile devices, and generate meaningful data that allows for evidence-based decisions. As a key factor in a municipality's operational effectiveness and success, technology will only continue to grow in importance.

Furthermore, with Vision Georgetown, the Town is poised for significant population growth over the coming years; the Town must establish technology capabilities that can facilitate growth in as efficient way as possible, while meeting the expectations of new and existing residents.

As technology has become increasingly important, the Town must be well-equipped and well-positioned to implement, manage and leverage technologies to deliver better services to customers such as online permitting, digital forms, tax account management online, etc.

Current Situation

So, how is the Town positioned? The current state assessment conducted in the first phase of this project indicates that while the Town has made progress in some areas, it has under-resourced technology, and lags behind comparator municipalities. The key findings were that:

- The Town needs to further develop its approach to technology initiatives to avoid under-planning, under-estimating and insufficient resourcing (financial and human).
- The Town must clarify roles and responsibilities and develop the tech savvy of business leaders to own and drive the success of business solutions in partnership with Information Services (IS).
- The IS Division has lacked a corporate profile and has been seen as a cost-centre / back office function. The Town would benefit from IS becoming a partner and transformation enabler – where IS can help business units identify and realize ideas that apply technology to improve service delivery.

- Existing IS governance has been ineffective. The Town should update its governance model to ensure it can harness the required authority to enforce the selection of priority, impactful projects, and to ensure that those projects secure the right resources to be successfully implemented.
- IS currently does not have the resources to meet the demands of the organization. Compared with similar-sized municipalities, the Town has fewer IS resources. The Town must add new resources to the IS team. In addition, a series of strategies to better leverage contract staff and consultants, vendors and managed service providers could help the Town.
- There is a significant amount of work ahead around business systems. Almost every major business solution in the Town is currently undergoing replacement or is earmarked either for replacement or significant work. This includes replacements of HR, Tax, and Recreation management systems. The Town needs a new Asset and Work management system, and an enterprise content management system (for more effective management of electronic files, drawings and records). In addition, existing systems such as Amanda used by Planning and Building Services must be expanded to support online services and mobile working. Great Plains, the Town's key accounting system, also requires future enhancements.

The findings indicate that, despite strong staff and good skills in IS along with much hard work, there are many remaining opportunities for the Town to improve its ability to leverage technology.

More recently the Town's leadership and Council have recognized the historic gap and begun to shift its approach – particularly with the significant investment that the Town has made in the SPIRIT program to improve financial processes, the support of mobile technology for Building Inspectors, the introduction of web-streaming, agenda management and a more robust payroll system, and several other system upgrades. In addition, the Manager of Information Services has now joined the Senior Management Team so that a corporate-wide technology perspective can be brought to all strategic decisions. The Information Services complement was also expanded in 2018, resulting in the conversion of two contractual positions to permanent full-time staff. In general, the support for technology has been on the rise in the last several years.

Strategic Directions and Key Recommendations

Building upon this, the strategy focuses in two distinct areas:

1) **Elevating the importance of technology**: The Town should take technology seriously if it wishes to see improved outcomes. This means giving technology the senior leadership attention, investment and resources that it needs.
2) **Leveraging technology as an enabler of modern business practices**: The Town should implement modern technologies to digitize processes, offer online services and provide staff with tools that simply enable collaboration and better service delivery internally and externally.

In supporting these strategic direction, it is recommended that the Town:

1) **Elevate the importance of technology by**:
    a. Updating IS governance to engage senior leaders in setting the strategic direction and priorities around technology;
    b. Updating the project evaluation and selection process to ensure that the Town commits to a realistic number of priority projects per year;
    c. Implementing project and change management methodologies to improve project outcomes;
    d. Increasing capital and operating investments in technology by exploring alternative funding sources such as Development Charges, Building Permit Reserves and the Gas Tax;
    e. Evolving a stronger tech savviness at the Town, through IS leadership, governance, engagement and communication, training and education;
    f. Equipping the IS Division to provide stronger leadership by reorganizing existing IS resources, clearly allocating roles and responsibilities and freeing the IS Manager from day-to-day operational responsibilities to focus on strategic areas;
    g. Investing in new IS resources by adding six IS staff over the next three years, with the goal of positioning IS as a strong business partner with the capacity to work with business units to apply technology in a transformational way;
    h. Leveraging industry expertise by using external service providers to manage key areas of technology infrastructure, allowing internal resources to focus on technology coordination, and strategic direction setting;
    i. Funding, through capital budgets, contract staffing in business units, with IS supporting project delivery

2) **Leverage technology as an enabler of modern business practices by:**
    a. Digitizing business processes through the implementation of a range of new business systems technologies, including:
        i. Perfect Mind – online recreation program and facility booking systems implementation that is currently underway
        ii. CRM – customer relationship management, providing online case management – an expected outcome of a fulsome customer service strategy
        iii. Asset and Work Management Systems – effective management of work against assets and mobile technology to support field crews
        iv. Payroll and HR system – employee self-service systems implementation that is currently underway
        v. Tax system replacement – modern tax system, including online account management; investigation of options in process
        vi. Amanda 7 upgrade and online services, electronic plans review and mobility
        vii. Business intelligence and dashboard capabilities – increased insight into operations, performance and policy impacts

b. Modernizing employee experiences
    i. Improved device choices – laptops, tablet, smartphones
    ii. Office365 – Mail / Calendar / Collaboration– modernized, cloud based system
    iii. Remote Access – increased flexibility of working options
    iv. Collaboration – enhanced ability to work collaboratively, dealing with documents and web meetings
    v. Wi-Fi – enables more productive meetings and connectivity
c. Providing mobile technology to field-based staff – via Amanda and Asset and Work Management programs
d. Adopting Cloud services and solutions
e. Using data to inform and improve service delivery
f. Increasing digital delivery of Town services

These recommendations have been presented in a costed and sequenced work plan which can be found in Section 6 and Appendix A.

Conclusion

To be successful with this strategy, it's important to understand and appreciate the importance of technology, focusing on priorities identified within this strategy and investing sufficiently in IS to meet the needs of staff, Council and the expectations of residents.

Technology needs to be more central to Town operations to better manage challenges and capitalize on opportunities for improvement. It is recommended that the Senior Management Team continue to be actively involved in championing the technology agenda and driving technology improvements into all business areas – while helping to secure sufficient resources to realize its vision.

As the Town prepares for growth around Vision Georgetown, this investment in technology has never been more critical.

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1. Introduction

1.1 The Importance of Technology for the Town

The best run municipalities around the world, large and small, rely on technology to be effective, increase the productivity and efficiency of their staff, and deliver services that delight customers with their simplicity and convenience.

The Town is already heavily dependent upon technology in the back office. Services as diverse as collecting taxes, dispatching fire trucks, handling customer enquiries, issuing building permits and managing recreation program registration, all rely on information technology to operate.

While the Town has made some progress in some areas, looking to the future, technology will only continue to grow in importance.

Existing systems reaching 'end of life' must be replaced. New systems will be required by the Town to address emerging needs – such as managing assets and customer service delivery. New services, such as public transit may be heavily reliant on technology. More customers will expect to use their computers, smartphones and, perhaps in the near future, voice assistants to interact with the Town. The Town will increasingly employ what are referred to as smart technologies and be more connected as Town-wide sensors are used to monitor critical infrastructure and alert staff to where problems are anticipated or have occurred. Data and information will become more important, providing insights about service delivery that allow Town officials to optimize efficiency and improve services.

So, the Town needs to be well-positioned to implement and manage technologies that are increasingly important to its effectiveness.

1.2 Technology's Role in Supporting Growth

On top of that, with the Town poised for significant population growth over the coming years, with a target of 94,000 by 2031, the Town is transitioning into a larger municipality and a large enterprise that must establish technology capabilities suitable for its size and its residents.

Technology can assist the Town with the pressures it will face during this high growth period.

Some existing practices will not scale. As the Town grows, it simply becomes impossible for paper and personal knowledge-based processes to be effective at coordinating activities and sharing information across larger teams, more projects and more cases. To support the Town's growth, existing knowledge, processes and procedures must be captured and digitized into integrated systems – such that work can be run and tracked through the systems. This helps new staff easily adopt Town

processes, and ensures the knowledge of long-standing employees can be documented for succession planning purposes.

Growth means increasing complexity. As the Town grows, the complexity of the issues the Town deals with will also grow. Accordingly, the importance of integrated planning and coordination across departments and agencies will grow. Information technology can assist with the sharing of information, visualization and coordination of activities.

Pressure on core services. All departments are dependent on core corporate services and in particular, HR and Accounting. Eliminating manual processes that inhibit the ability of departments to move at the speed they need, while balancing corporate controls related to time and attendance, performance reporting, purchasing and budget management can all be enabled using technology.

1.3 Importance of the CTSP

Given the ever-increasing importance of technology and its role in delivering municipal services, the CTSP is a crucial piece of work. Amongst the many opportunities that the Town is bombarded with, the CTSP must help the Town determine its priorities and identify the key initiatives and activities that will support the Town's goals and objectives:

- Is the Information Services environment properly managed, maintained, secured, and able to support the needs of the Town?
- Is the IS service cost effective?
- What are the Town's future business needs?
- Is the technology environment, and our resources and management practices equipped to meet current and future business needs?

It is important to note that this is a corporate information technology strategic plan, not an IS Division plan. It looks at how the whole corporation can leverage technology to deliver improved services and customer experiences, efficiency and productivity.

1.4 How the CTSP was Developed

The CTSP project had three phases: (1) Discovery; (2) Strategize; (3) Plan.

The Discovery Phase kicked off in October 2017, with a set of on-site interviews, meetings, surveys, workshops and assessments involving Council members, and staff, including the Senior Management Team and all of the IS staff. At the conclusion of the Discovery Phase, initial findings and observations were shared with the Town's project leads (Commissioner of Corporate Services and IS Manager) and reviewed with SMT.

During the Strategize Phase, we held numerous working sessions with IS management and Town staff to establish important strategic directions on topics such as technology and business systems. We worked collaboratively with SMT through workshops and

discussions to define the future approach to technology, roles and responsibilities and governance. We also worked with the Extended Management Team to share concepts and identify future priorities.

During the Plan Phase, the strategic directions were translated into a set of costed and sequenced initiatives, a proposed organization structure was prepared, and recommendations developed and reviewed. This final report compiles the results of all three phases and was delivered in May 2018.

2. Findings

An assessment of the current state was the starting point for developing the strategy. To review the current state, the consulting team looked at various aspects of technology and technology management, including 1) Technology Systems, and 2) IT Management Practices. The following section provides a high-level summary of the results of the findings.

2.1 Technology Systems

2.1.1 Introducing the Municipal Technology Architecture

Perry Group's Municipal Technology Architecture (MTA) is shown in Figure 1 below.

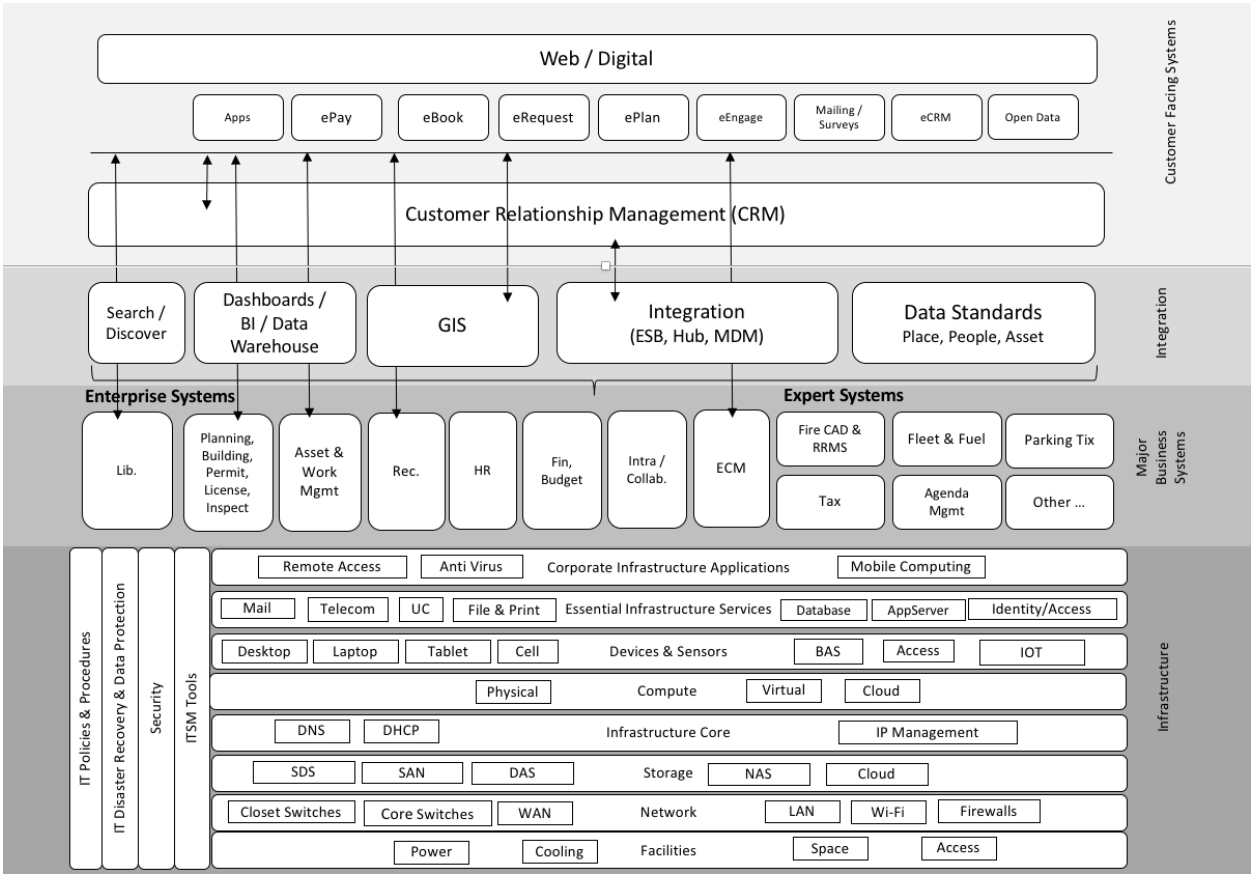


Figure 1: Municipal Technology Architecture

This is a conceptual municipal IT model that has been developed and refined by Perry Group in consultation with many municipalities over the past 10 years. The MTA identifies the technologies that a municipality should have in place and provides a framework for the consulting team to assess a municipality's technology environment.

The MTA introduces several key concepts that are important for the Town:

- There are 4 main technology layers (labeled in Figure 1 as: infrastructure, business systems, integration, customer facing). Each requires discrete IT skill sets to be managed effectively. For instance, while technology infrastructure management is deeply technical, business systems projects require project and process management, change management and people skills. Web projects need development and UX (User Experience) expertise. An IT organization needs a breadth of skills, across the various layers to effectively manage the complete environment.

- The Infrastructure layer is the foundation for the entire technology environment. Infrastructure must be robust and reliable because it provides the foundations for all other layers. Unreliable infrastructure undermines all the technology that sits above it.

- Appropriate policies, security, data protection and disaster recovery provisions should be in place to protect the Town's information assets and meet its legal compliance obligations. Ideally, the IT team should have the tools needed to help manage the environment efficiently. These include a helpdesk request tracking system, systems management solutions, and automation tools (e.g. remote support, patch management, mobile device management) to simplify IT management tasks, increase IT staff productivity and enable employee self-service (e.g. password resets).

- A municipality should limit the number of corporate business system platforms it runs to minimise process and information silos. These core systems should be purchased off-the-shelf solutions configured to support the Town's business processes – customization should be avoided because it complicates upgrade paths, reinforces silos and often leads to single points of failure. These business systems or business platforms will provide the foundations for automated and streamlined business processes. They will gather data to drive analytics capabilities and underpin the effective delivery of online services.

- Business systems should be integrated allowing for data to be automatically passed between systems (using integration technologies), thus reducing data duplication and errors, and ensuring auditability, whilst enabling data analysis and predictive capabilities.

- Customer-facing digital solutions should allow customers to easily find information and answers to common questions, to transact with the Town by submitting requests and applications and making payments and allow the Town to engage with residents to seek their input on important decisions. All of these systems must be integrated into back office systems (those systems used by staff in the 'back office' – i.e. non-customer facing staff) – if processes are not digitized in the back office, they cannot effectively be offered online.

- The IT architecture should build from the bottom up – infrastructure first, then business systems and so on.

These are some of the basic tenets that underpin a well-designed municipal technology environment.

2.1.2 Assessing the Town's Technology against the MTA

At the conclusion of the Discovery Phase, a detailed findings report was prepared and shared with the SMT.

Figure 2 provides a visual summary of the results of the consultant's assessment.

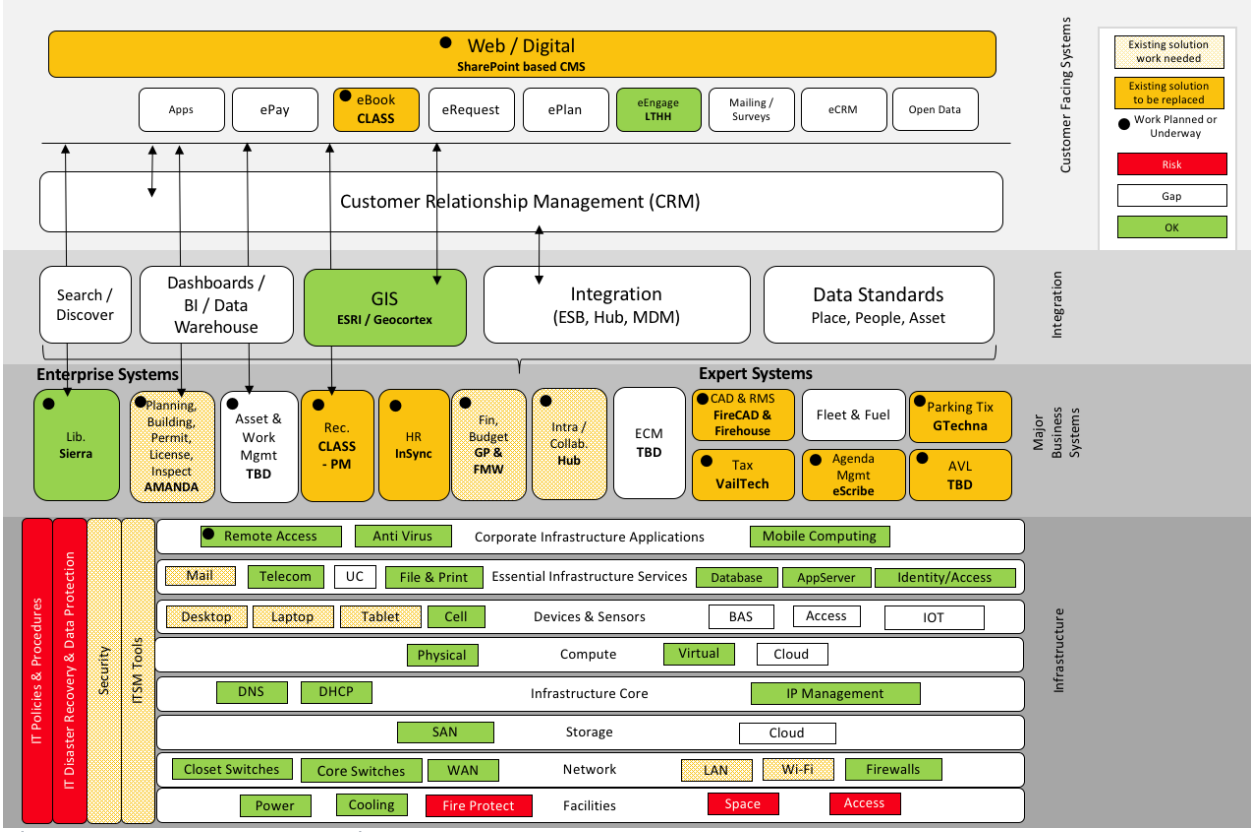


Figure 2: MTA Assessment Results

The following section highlights key points in each layer of the MTA.

Infrastructure

Positive aspects:

- A well-defined technology refresh cycle for end-user devices
- Good investment in enterprise class technologies, for example
    - VMWare – 90% virtualized
    - Maas360 / BES

3rd party firewall management – use of managed service partner for industry expertise

Key Issues:

- Wi-Fi – the current solution for staff and public Wi-Fi does not meet user expectations
- Survey results indicated dissatisfaction with 'performance' and 'devices', which requires further investigation
- The Town faces storage challenges – which manifest in email limits, large file transfer challenges, and localized storage solutions in departments
- An independent external assessment of security and network is recommended
- Shared physical access to data closets is a security risk that should be mitigated
- Water sprinklers in the Data Centre is noted as a key risk to computer equipment
- Outdated IT Disaster Recovery plan and protections (lack of rigorous testing regimen)
- Lack of corporate IT policies is also a risk

Business Systems

Positives:

- The Town has already made some core investments in suitable municipal technologies, including Amanda, Great Plains, GIS, and the Library Management system

Key Issues

- Almost all business systems require or have planned work
- There is an ongoing 'frustration' with Amanda and ongoing adoption – the Town needs to resolve this issue with a clear and committed roadmap
- There is some outstanding SPIRIT project work with Great Plains, alongside frustrations with vendor support and product capabilities
- The Town will need to implement an Asset / Work Management system
- The Town will require an HR system replacement, and has started with payroll and time/attendance; a more comprehensive plan around HR systems is required
- The Town must replace CLASS, as the system had reached 'end of life'. A project to replace with Perfect Mind is underway
- The Town has implemented a SharePoint based Intranet and collaboration platform, but staff and management appear to be dissatisfied with the solution
- There is major gap in that there is no Enterprise Content Management (ECM) solution – this is technology that enables the Town to effectively manage, catalogue and search documents, drawings and files
- Support model for business systems is not consistently defined and applied (e.g. Great Plains, SharePoint – departmental resources vs. Amanda)

Integration

Positives:

- GIS is widely acknowledged as a high value system across organization
- Some data standards work is underway, largely led by GIS (e.g. Assets data)

Key Issues:

- There is opportunity for further data standards work – required to support future initiatives (e.g. CRM)
- Limited systems integration results in data duplication, errors, and staff time wasted (this is particularly prevalent around financial / POS processes – such as in processing payments in Amanda for permitting and licensing activities)
- It is difficult for staff to find files in unstructured file shares
- There is limited reporting, dashboarding and business intelligence capabilities

Customer Facing

Positives:

- Let's Talk Halton Hills
- Recent re-design of website to improve navigation and look and feel

Key Issues:

- Self-developed content management system for the website is a risk due to the single point of staff knowledge, plus internal development consumes key resources
- There are few end-to-end online services, despite appearance to customers, many offerings generate back-office emails – which are not end-to-end transactions. The Town is lacking technology components to support digital delivery – eForms, Payments, Signatures, etc. But the lack of back-end business process digitization is the biggest impediment to digital service delivery.
- There is no over-arching customer service strategy or a corporate CRM system.

Summary

In summary, the assessment indicates that there is significant work needed in all layers of the MTA

- There are some good positives in the infrastructure layer, with a series of 'green' rated elements. However, there are some areas that must be addressed, including storage concerns, along with security, degree of risk, IT service continuity, data centre facilities.
- A significant amount of work is ahead in the Business Solutions Layer. Almost every major business solution in the Town is earmarked either for replacement or significant work. This includes replacements of HR, Tax, Recreation management systems. The Town needs a new Asset and Work Management system, and an ECM system. Both are large systems akin to the size of the implementation of Great Plains. In addition, existing systems such as Amanda must evolve to support online services and mobile working. Great Plains should also be further developed.
- Although there has been some good work around the GIS, there has been very limited progress to date at the integration level. This is understandable because integration depends on the business systems and there remains significant work in that area before work on integration should proceed too far.

- Major work is needed at the customer-facing level, specifically in respects of CRM and web site platform updates – but note that much of the work to offer digital services to customers is dependent upon the digitization of back office work processes and the development of a corporate customer service strategy.

What is clear from this assessment is that, while there are some areas for improvement in the Infrastructure layer, the area in which the Town needs to focus to become more effective as an organization is in the Business Systems layer.

Until the Town's business processes are fully digitized – inefficient, manual and paper driven processes will act as a drag on the Town's ability to be effective, agile and responsive.

2.2 IT Management Practices

2.2.1 IT Governance

IT governance is the broad term given to the groups, processes and methods that are used to make effective technology decisions. Effective IT governance is essential if an organization is to control, coordinate and ultimately derive the best value from its investments in technology.

The figure below identifies the typical structures and processes that should be present in a well-governed IT environment, alongside an assessment of the Town's current situation.

Typical Structures and Processes	High Performing	Halton Hills
Executive IT Steering Committee	Yes	Partial
Clear and consistent IT investment process, including project prioritization	Yes	Partial
Project portfolio management	Yes	Partial
Consistent / repeatable project delivery process	Yes	Partial
Corporate IT policies	Yes	Partial
Corporate IT standards	Yes	No

Figure 3: Typical Governance Groups and Processes of a high functioning IT organization

As can be seen, the Town has, at the point of our assessment, partially put in place many of the best practice processes needed for effective IT governance.

However, the evidence suggests that current IT governance is not wholly effective, with departments frequently routing around the process. The Town has an IT Steering Committee, but the responsibility has been delegated too far down in the organizational

hierarchy. The leaders of the organization are not directly involved in technology prioritization and monitoring of delivery. Where Steering Committees exist for coordinating systems – such as Amanda or the Web – they are also not as effective as they need to be.

More generally speaking, there is a lack of organizational understanding about what it takes to deliver successful technology solutions and a tendency to under-estimate project costs and the resources required to deliver the project. This starts projects on a poor footing, from which it is almost impossible to recover.

A more effective governance model is required.

2.2.2 IT Staffing

IT is currently part of the Corporate Services Department. The following IS organization structure and staffing is in place, with 9 FTE (following the conversion of two contract positions in 2018).

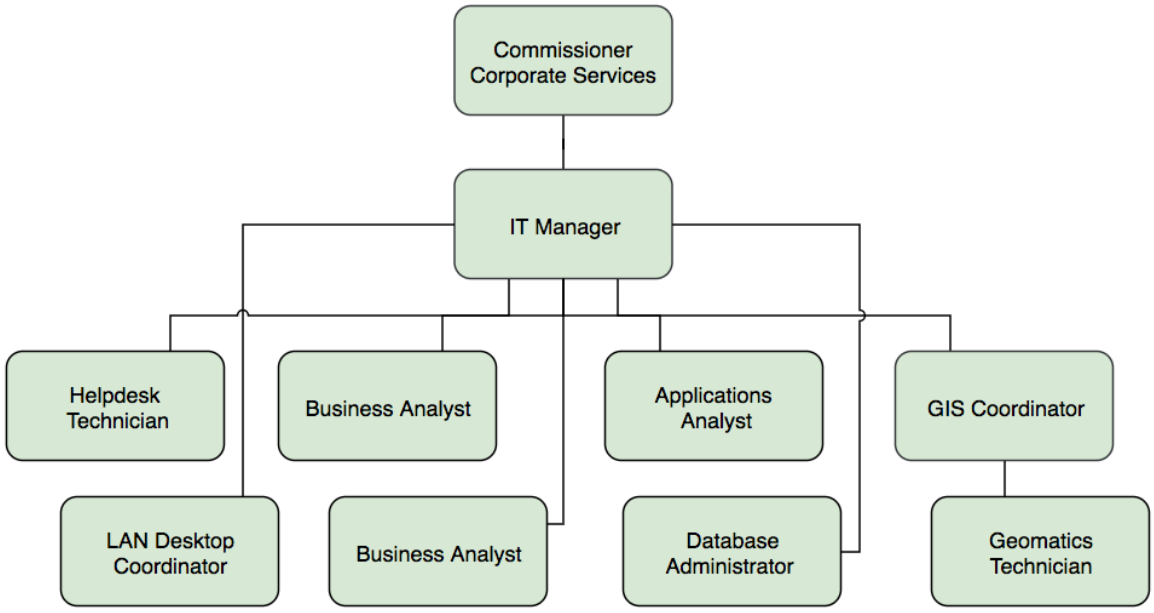


Figure 4: Current IT Organization Structure

Despite the conversion of the two additional positions, the team still has relatively few members, and there are clear gaps:

- There is a lack of technology staff to support the technology infrastructure – only one staff member is assigned to this for the 350 users. This is a very low ratio and thus the IS Manager is required to spend a significant portion of hands-on time supporting and managing the technology infrastructure
- There is a lack of business solutions support staff (Applications Analysts), meaning that there are numerous single points of failure in support of important systems.

- Because of this situation, staff serving as Business Analysts are required to fulfill roles that are not part of their job description – pulling them away from the work that is needed
- The Web Systems Administrator / Coordinator is currently located in Communications; this position should be within IS.

Although there is no formally defined model around centralized or decentralized IT at the Town, some roles with IT specific functions (typically as a portion of their responsibilities) exist in divisions other than IT, including:

- Web Systems Developer-Coordinator (Communications)
- Recreation and Facilities Software Lead (CMS)
- Great Plains Lead (Finance)

In addition, a number of business units have begun to directly engage technical project resources (e.g. project management or technology specialists) to lead technology project work – e.g. for the SPIRIT project, for the implementation of the new Payroll project and for the CLASS replacement project. Adding resources, funded through capital is a good strategy, but those resources should fall under the management and oversight of IS to ensure strong alignment of implemented solutions.

Pursuing a decentralized IT staffing model for the Town is problematic for a number of reasons:

- The Town's technology governance is not well enough evolved (policies and standards have not been defined) to provide a framework for decentralized staff to operate within
- Departmental management don't have the skills to provide technical oversight for technical resources outside of IS, and there are no formal, or dotted line, reporting relationships into IS for technical staff outside

Furthermore, software development outside of IS is not a recommended practice.

In larger, well-governed, technically mature organizations, a decentralized model can work effectively, but ultimately, in smaller, less mature organizations where IT resources are tight, a centralized model is a more effective way of applying those scarce resources.

Staffing Ratios

Typically, in Ontario municipalities, IT staff make up between 1 – 4% of total staffing. Those that invest more in technology tend to be more advanced in their utilization of technology – thus municipalities such as Burlington, Oakville and Kitchener (and Calgary as a larger example) that devote a higher proportion of staff to technology are further ahead with their technology efforts.

The Town currently allocates 1.7% of total Town staffing to IT. This is below the Perry Group recommended range which is between 2.5 – 5.0%. A reasonable go-forward target for the Town for the future should be 3.0% of total staffing.

A comparison was made with other similar-sized municipalities, including Aurora, Caledon, Newmarket, Clarington and Milton. Halton Hills was found to have a significantly lower ratio of IT staff to staff and to population than any of the other municipalities.

It is important to note of course that the number of IT staff should be proportional to the number of total staff. So, as the number of staff at the Town grows the support demands increase. Thus, as the organization grows the Town should expect the IS Division to grow in parallel.

2.2.3 IT Service Management

Our assessment also identified areas for improvement in the application of best practice processes around IT Service Management (the practice of the delivery of the IT service otherwise known as ITSM). Whilst some of the expected practices are in place, there are opportunities for improvement – and some key gaps. The figure below illustrates the results of our assessment.

ITSM Processes	High Performing	Halton Hills
Service Desk	Yes	Yes
Incident Management	Yes	Partial
Change and Release Management	Yes	No
Knowledge Management	Yes	Partial
Problem Management	Yes	No
IT Asset Management	Yes	Partial
IT Service Catalog	Yes	Partial

Figure 5: ITSM Assessment Findings contrasting Halton Hills with a typical, well managed IT organization

Each of the ITSM processes offer important capabilities that support the efficient and effective delivery of the IS service. The IS Division should have these processes in place and so this is an area for improvement. Particular attention is required to the change and release management and problem management processes.

2.3 Key Issues for the Town to Address

There are a number of positives from which to build:

- New Town leadership has led to increased attention, focus and investment in information technology – for example, with the recent conversion of IS positions from contract to permanent
- New corporate services leadership is taking a more progressive view of the value of information technology
- There has been a clear acknowledgement and follow-through on the need to contract in resources to support projects (e.g. SPIRIT, Perfect Mind)
- Good skills and capabilities within IS to provide the leadership and support that business units need to maximize benefits and empower the organization

Nonetheless, there are clearly some key issues to address if the Town is to maximize the value it can get from technology. The consulting team identified the following priority areas of focus for the Town:

- The organization needs to further develop its approach to business-technology initiatives to ensure that initiatives are well-planned, accurately costed and resourced. The Town needs to make strategic choices around projects and how they are to be undertaken
- There is a lack of technology ownership on the business side. The Town must clarify roles and responsibilities and develop the tech savvy of business leaders to own and drive the success of business solutions in partnership with IS
- IS has lacked corporate profile and has been seen as a cost-centre / back office function. Moving forward, the Town needs IS to become a partner and transformation enabler – where IS understands the business of each division and can help identify and realize ideas that apply technology to improve service delivery
- Existing IT governance has been ineffective. The Town must update its governance model to ensure it can harness the required authority to enforce the selection of priority, impactful projects, and to ensure that those projects secure the right resources and funds to be successfully implemented
- IS has insufficient resources to meet the demands. Compared with similar-sized municipalities, the Town has fewer IT resources. The Town must add new resources to the IS team, including Infrastructure Analyst, Business Analyst and Application Analyst roles. In addition, a series of strategies to better leverage contract staff, consultants and vendors and managed service providers should be pursued.
- A significant amount of work is ahead in the Business Solutions Layer. Almost every business solution that the Town has is earmarked either for replacement or significant work. This includes replacements of HR, Tax, Recreation management systems. The Town needs a new Asset and Work Management system, and an ECM system. In addition, existing systems such as Amanda must be evolved to support online services and mobile working. Great Plains should also be further evolved.

3. The Strategy

The strategy introduces two key areas of focus:

1) Elevate the Importance of Technology
2) Use Technology to drive Modernization of Business Practices

This section will explain what these focus areas mean, and what will be tackled in each area. Subsequent sections will discuss in more detail the governance and organizational models that are recommended and the technology projects that the Town should undertake over the next five years.

3.1 Elevate the Importance of Technology

The Town needs to set the conditions for success with technology.

There are a series of things that the best run municipalities ensure are in place to secure their success with technology. These include:

- Engaged and tech savvy executive leadership who can define the vision, and provide leadership and change management support to build a digital workplace
- Formalized corporate technology governance that helps the organization focus on a number of realistic and agreed upon priorities, for which the appropriate level of due diligence and planning has been undertaken
- Significant ongoing investment in technology
- Sufficient resources, with appropriate skills and clearly defined roles and responsibilities to technology
- Dedicated staff in IT and Business Units for projects
- Strong, respected IT leadership
- A high performing IT staff - with key roles clearly defined and filled
- Strong, actively nurtured partnerships between IT and business units

So, the strategy is focused upon establishing these things at the Town.

3.1.1 Increase IT Development

While there are pockets of the Town where good IT practices are present; however, more development is needed in the planning and implementation of technology. This is illustrated by departmental attempts to budget for technology projects without consultation with the IS Division that are woefully inadequate, due to a lack of understanding.

Overall, the Town's tech savviness needs to increase. For example, there needs to be more understanding of what it takes to build a successful technology program, and there needs to be greater role clarification between business units and IS staff.

An improved approach to technology will develop gradually but will be driven by a) the adoption of the governance model, which provides a forum for leadership to learn about which practices work, and re-apply these practices to future activities b) the leadership of IS through advice and projects, and c) the involvement of business unit management and staff in projects that tackle business transformation project

3.1.2 Improve the Governance Model: Govern from the Top

As recommended by industry best practices, senior leadership should be more actively involved in setting the Town's technology priorities, overseeing the delivery of the technology program and resolving conflicts and challenges.

In response, a senior leadership level Corporate Technology Governance Committee (CTGC), has already been established, chaired by the CAO and comprised of Commissioners and the IS Manager. The Manager supports the CTGC, acting as an advisor and bringing forward information and metrics to provide the insight needed for CTGC to make informed technology decisions. Recommendations regarding standards, and priorities will also come forward from the IS Manager.

While there has been progress in terms of governance, the Town's IS policy framework needs to be updated to reflect a modernization of approach that empowers staff, while balancing corporate responsibilities and security obligations. Individual policies will be brought forward by the IS Manager to CTGC for review and endorsement.

Further discussion of the details of the recommended IS governance model can be found in Appendix B.

3.1.3 Select the Right Projects

As part of IS governance there should be a process to consciously select the technology projects that the Town will invest in.

There are a myriad of opportunities to use technology to improve services, productivity and to make the lives of staff and customers easier. In fact, there are far more than the Town has the capacity or the funding to tackle. The trick to being successful with technology is to be focused, to not try to do too much, to select the projects that are going to have the largest impact, and to phase projects so that they are undertaken in a logical sequence. Just as when building a house, foundations must be dug, and footings poured before walls go up, foundational technology infrastructure and business systems projects must be implemented before new online services can be delivered.

So, the Town should improve existing processes to ensure that all proposed technology ideas and concepts are subject to the appropriate due diligence needed to assess potential projects, to prioritize projects and with the authority of the CTGC, to select a small handful of projects that support corporate objectives and that the Town as a whole will focus upon annually.

3.1.4 Do the Projects Right

Once the projects are selected, then the projects selected must be executed well to achieve the desired outcomes.

This means that they should be resourced suitably with staff from business units and IS, they should follow a best practice project management methodology (which is proven to improve project outcomes), they should include suitable planning for business process change and change management activities to promote adoption.

IS governance must ensure that these best practices are in place for all technology projects.

The IS manager should provide dashboards and reporting to support the CTGC in their active monitoring of the delivery of the IS project portfolio.

3.1.5 Increase Investment in IT

Benchmarks indicate that those municipalities that invest more in technology, typically see better outcomes. Burlington, Oakville and Halton Region locally are good examples of municipalities that have prioritized investment in technology – and are the municipalities with which the Town and its residents compare themselves.

In contrast to these municipalities, the Town has under-estimated and under-invested in technology. Increased investment in technology – from both capital and operating budgets will be required for this strategy– and should be proposed through future budget processes.

Budget

Given the long-term funding needs for IS, the Town should review its technology reserve to determine an appropriate annual reserve allocation, while also considering how this reserve can fund future technology investments including those arising from lifecycle replacement – particularly around major systems, such as Great Plains.

To facilitate the increased investment and ongoing support of technology the Town should also look to alternative funding sources outside of the IS envelope. It is in the ongoing operations of technology that the Town faces the toughest challenge. For every new technology implemented, new demands are placed upon the organization to support and maintain the technology. The Town should continue to explore a range of alternative funding sources to support technology investments that have been pursued successfully by other municipalities. These include:

- **Development Charges** - supporting technology investments related to growth - e.g. fire mobile technology, traffic light pre-emption, public Wi-Fi provision. Note the City of Vaughan has made changes in its Official Plan to address the need for public Wi-Fi in City facilities.

- **Building Permit Reserve** - used to directly fund permitting technology and indirectly fund upstream and downstream technology and process improvements that contribute to improved permitting process - e.g. planning application processing technology
- **Gas Tax** - used to fund technology projects related to Asset Management - e.g. City of Waterloo received an FCM award for investing over $700,000 of gas tax funds into its asset management systems
- **Departmentally Funded Technology and Resources** - e.g. in Burlington additional corporate IT staff have been paid for from the Fire budget, providing additional resources to support Fire, but centrally managed and coordinated resources.
- **Grants and Challenges** - e.g. Smart City Challenge, FCM Asset Management, Community Improvement (for instance the town has successfully secured grants in this way to support the Asset Management program and should continue to pursue such opportunities)
- **Growing revenues to offset technology costs** - e.g. Advertising linked to digital services
- **Services Surcharges** (specifically on B2B services) to fund implementation of digital services - e.g. building permit or planning application 'surcharge' diverted to a fund to support the implementation of digital services that reduce costs for those using the service through for instance reduced plan printing and visits to Town Hall.
- **Technology Levy –** some municipalities have introduced a levy to fund investment in community technology. For example, the Town of Caledon has introduced a "broadband levy" to address improved internet services in their community[1].

Another major change that will have an impact on the Town's technology budgets: technology expenses are beginning to shift from capital to operating budgets.

In recent years, the technology industry has rapidly moved from a buy to a rent model. As cloud services have popularized subscriptions, almost all IT software and services are now shifting to a subscription basis, so there is no hiding from this new business model. This has the benefit to the Town of lowering the up-front capital investments required to get technology up and running, but it shifts costs to ongoing operating budgets – and a potentially higher total cost of ownership.

The Town must prepare financially for this transition as IT operating expenses should be expected to increase substantially as subscription fees increase as a proportion of overall IT costs.

Capital funding will still be required to support project implementations (professional services, staffing), hardware and other technology procurement, but it is reasonable to

[1] https://www.caledon.ca/en/business/Internet.asp#broadband

assume that all software expenditures will gradually transition to subscription and thus operating accounts over the next 5 years.

3.1.6 Elevate the role of the IS Division

The Town should look to elevate the role of the IS Division, from a utility provider of technologies or a supplier of project deliverables, to a business partner that actively work with business units to identify, champion and drive the implementation of technology solutions that transform existing services or enable new services, or drive significant improvements in productivity of staff.

The IS Division must move to a mode of operation where they are actively managing relationships and working with business units to proactively think about how technology can be applied to business problems. This can only be achieved with the allocation of sufficient resources – which is discussed further in Section 5.

The IS Manager has recently become a permanent and active member of the SMT ensuring that the technology perspective can be brought to all aspects of Town strategic decision-making.

IS as a Business Partner

IS can only be an effective business partner if it is actively engaged in regular, ongoing discussions with business units – and is in the room as new ideas to apply technology are germinated.

Thus, IS should implement a Business Partner approach, whereby Business Analysts and IS leaders are each allocated business units – section, division, department to work with to develop a good understanding of the operations of that business area, the challenges and opportunities and to build strong business relationships with management and staff in those areas. This will help build trust and a base of understanding needed to help business units. As part of the Business Partner approach the IS Division will also institute an ongoing service management program, whereby business unit leaders and IS relationship managers will meet monthly or bi-monthly to review current service levels, inflight projects, and consider future opportunities.

One way to achieve this approach is to free the IS Manager and other staff from existing operational responsibilities, so that they can work on leveraging technology in a strategic way. An approach that embraces the outsourcing of technology operations is also recommended – and further discussed in Section 5.

3.2 Leverage Technology as an enabler of Modern Business Practices

The previous section focused upon how the Town approaches and manages technology – these shifts in approach are crucial to future success and will have long lasting impacts.

This section focuses upon the technologies that the Town can implement, under its new approach, to modernize and optimize business processes and practices.

The technologies recommended here have been implemented by other municipalities. They are not 'nice to have' features – they are 'must haves' that are proven to help organizations deal with significant growth, increase the productivity of staff, and deliver services in the way that residents moving into the Town increasingly expect – via web browser and smartphone.

3.2.1 Digitize Business Processes

Effective municipalities rely on a combination of **people**, **processes** and **technology,** working together in a synchronized fashion, to deliver services to customers.

To deliver efficient and effective government services, those processes should be digitized – this represents a move away from paper-based or spreadsheet-based processes to electronic, online, workflow managed, real-time processes.

Digitization should be built upon a small number of powerful business systems (e.g. Finance and HR systems, Work Management, Permitting, Licensing and Land, Recreation Management, Customer Relationship Management) that will drive much of the operation of the Town.

The business systems used should be common and shared across departments and divisions so that tasks initiated in one area can be allocated to another; so, for example, a change in a permit application status (in Building) could trigger the processing of a pre-approved payment (in Finance).

The full digitization of processes provides the foundation for becoming an efficient organization.

When processes are digitized and managed electronically, all necessary transaction processing - workflows, notifications, quality checks and validations - can be carried out via a device, and can happen anywhere (in the office, at a worksite, in a truck at the side of the road, or at home). Offline steps (manual interventions such as checking a paper file or getting a physical signature) are reduced or eliminated. The online chain provides complete visibility of the process throughout the organization – anyone can check the status or find out required information. Systems manage the routing and workflow of the processes, including escalating items to senior staff when exceptions are encountered, or where performance falls below defined levels of service.

Digitization allows the City to track its own processes, to share information between staff, and to track important management metrics that provide insights that contribute to improved process effectiveness.

As noted in the MTA assessment in Section 2, there are a series of business systems that are currently missing, or in need of replacement. So, a significant portion of the

work envisioned by the strategy focuses upon addressing these gaps and digitizing important work processes such as payroll, asset and work management, development planning, and customer service requests and enquiries amongst others.

3.2.2 Modernize Employee Experiences (EX)

Staff is using devices (iPad's, smartphones and Chromebooks) and services (Facebook, WhatsApp, Uber) in their personal lives that are simple, easy and often fun to use. They are looking for the same, flexible, consumer-friendly technology at work that helps them get stuff done. Thus, adopting consumer technologies, moving from desktops to laptops as the default device, providing tablet options and ubiquitous staff Wi-Fi in Town facilities is one area that modernizing services will be a focus.

In other areas, staff wants to be able to access services remotely from anywhere, using the device that they access. So, providing improved remote access, online access to mail, calendars and contacts and other services will simplify and make more accessible services.

Beyond these examples, there are numerous moments throughout the day that staff themselves interacts with the Town's business processes that could be streamlined or improved – contributing to improved staff productivity and improved perceptions of internal processes. Some examples include:

- Taking meeting notes using OneNote and a laptop in real time during the meeting, instead of taking paper notes and writing up meeting minutes afterwards
- Holding a video conference, to reduce travel time
- Presenting in a meeting room
- Filling out a leave request and securing approval
- Filling out a timesheet and securing approval
- Changing an address
- Completing an expense request
- Setting up a new project workspace
- Sharing a large file with a partner
- Ordering a new PC
- Completing a performance review
- Borrowing a Town vehicle
- Report a facilities problem

All of these processes could and should be simple, easy, fast … and online.

These repeated employee moments, which often frustrate and trip up a large number of staff daily, are strong candidates for digitization and process improvement. The Town should focus upon identifying and addressing those most visible, high impact changes that would have the largest benefit corporately.

3.2.3 Mobilize Field Staff with Technology

Over the last 20 years, significant effort has been put towards digitizing back-office processes at the Town – for example the processing of permits or handling of tax payments in the office.

But, in recent years mobile technology has radically improved, and today technology has extended from the office to the field. So, the police officer checks a plate from the side of the road, the UPS or FedEx driver is routed and has you sign for receipt of your parcel on her device, and the Uber driver relies on his smartphone to pick up a ride.

These same mobile technologies are now being used by municipalities to connect the bylaw officer, building and fire inspector, fire suppression, roads and parks crew using technology to the back office. So, field staff can access drawings in the field that they used to have to come back into the office to collect. Customer service staff can allocate work to the crew nearest to the work. Building Inspectors don't need to come into the office in the morning but can pick-up their scheduled inspections on their tablet from home.

The Town has already successfully implemented mobile technologies in the Building Division and will roll out similar technology to numerous other areas in the organization. In doing so, a whole new user base will begin to use technology, that had not previously. Staff must be trained and supported through the adoption. IS support must be re-configured to effectively support crews that may start early in the morning – before current IS services start.

3.2.4 Adopt Cloud Services and Solutions

Given previous discussions about pressures on internal infrastructure resources – one approach to reducing the infrastructure pressures is through the adoption of cloud services. This is an industry paradigm that has gained steam in recent years, to the point where it is becoming increasingly difficult in some areas (e.g. HR systems) to find vendors that provide on-site solutions. Many municipalities have moved to the cloud for email services (Office365, G-Suite), or are in the planning stages.

The Town should pursue cloud solutions as a strategic direction and thus will need to establish a clear policy statement and framework for assessing that cloud solutions meet the Town's security and privacy, resiliency and continuity requirements.

3.2.5 Use Data to Inform and Improve Service Delivery

Divisions have long collected data about transactions and activity as a bi-product of carrying out their work – such as tax payments, permits issued, bylaw complaints, residential fires. Increasingly municipalities are analysing that data to support service improvements.

Simply tracking and visualizing information about service delivery can have a significant impact on service performance.

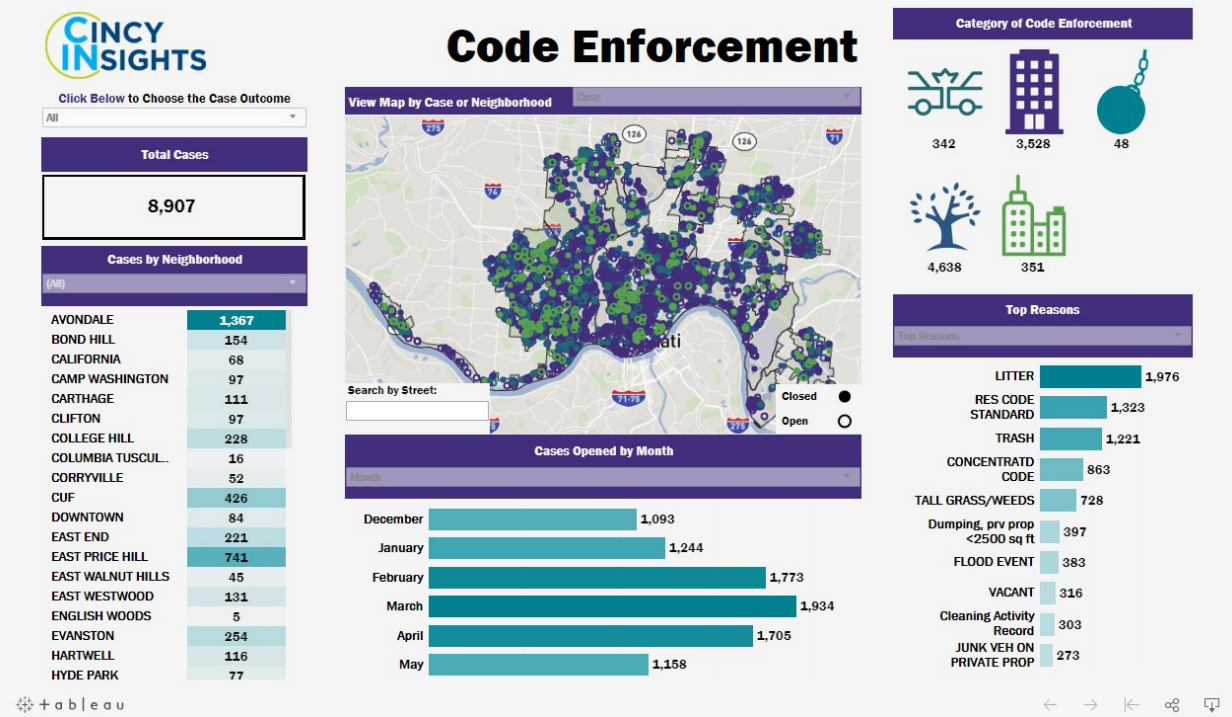


Figure 6: Example dashboard from City of Cincinnati

In more sophisticated examples, municipalities are analysing road traffic accidents to identify locations that require intersection design improvements, or are using socio-economic information to determine the best locations for community facilities, optimizing snow plow routes and targeting fire prevention efforts and education work to areas in which the messages will have the largest impact. In each of these examples, organizations are making decisions based on evidence to improve community safety, to reduce service delivery costs and deliver improved services.

So, the strategy makes recommendations that will position the Town to be able to a) collect the information that the Town needs (through digitized processes) and b) analyze and interpret the information to enable management to make informed decisions around service improvements.

3.2.6 Increase Digital Delivery of Town Services

More and more customers are dealing with their institutions – their bank, insurance firms, Service Ontario, or the CRA – online or via apps on smartphones. Netflix has overtaken cable TV, websites have overtaken newspapers and magazines. Increasingly, customers expect to interact with the Town electronically – in ways that are less disruptive and more convenient.

Others have characterized the way municipalities provide services as “Blockbuster service for Netflix customers” – an outdated service delivery model that no longer meets the needs of customers.

Beyond customer expectations, there are clear financial imperatives for the Town to offer and encourage the use of services online. Studies into channel costs suggest that a face-to-face customer interaction costs up to $30 per transaction, a phone transaction costs between $5 - $7, and a web transaction between $0.15 – $0.90. Quite simply, it is cheaper for the Town to transact online than in-person or via the phone.

So, while the introduction of more digital services is the long-term target for the Town, there are pre-requisites that must be in place before the Town can offer such services. Processes must be digitized first (as discussed in section 3.2.1) before services can be offered online.

So, not until later stages in the strategy, as business processes are digitized, will there be opportunities to fully extend Town services to digital channels.

3.3 Summary

In summary the strategy focuses upon the following areas:

- Elevating the importance of technology within the Town
- Equipping the IS Division with the resources and skills necessary, and positioning the Division appropriately to be a business partner that can effectively drive the technology needs of the organization and guide their implementation
- Digitizing internal business processes as the foundation of effective operations and pre-cursor to offering digital services
- Taking advantage of new computing capabilities and paradigms such as cloud computing, mobile technologies and data analytics as a way to reduce costs, increase agility and improve services.

The next section discusses in more detail the key technology projects that the strategy recommends.

4. Major Initiatives

The following section outlines the major projects that are recommended.

4.1 Major Technology Projects

As identified in the findings a series of technology infrastructure projects are required to establish robust, reliable foundations for the future.

4.1.1 Network Assessment and Managed Services

The network that connects Town facilities provides the underpinning of all technology services. If the network does not perform well, then all technologies that rely on connectivity will not perform well either. As the Town digitizes more processes, implements new technologies, embraces sensors and other Smart City capabilities, and uses more cloud services, the importance of the network grows exponentially. It is recommended that the Town conduct an external network assessment and develop a long-term network development plan that will meet the future needs of the organization. Furthermore, the Town should out-task the management of the network to a managed services provider to secure the expertise necessary and ensure that the Town can operate a robust and reliable network, without the addition of new IS staff specific to network management.

4.1.2 Wi-Fi Provisioning

It is recommended that the Town, as part of its broader network review, consider its approach to Wi-Fi provisioning. For internal, secured Wi-Fi, the IS team should review delivery standards and expectations and plan for the expansion of Wi-Fi provision at Town facilities – that can allow for more flexibility working in and around Town facilities and meeting spaces.

For public Wi-Fi, the Town should review the standards and requirements, and determine whether this is a business area that it will continue to pursue, or whether a partnership with a commercial provider would make more strategic and operational sense.

4.1.3 Storage / Data Assessment and Data Archiving

The Town's data storage volumes continue to grow exponentially, adding cost and complexity to the technology environment. It is recommended that the Town undertake a data assessment to determine the state of its storage, and to identify a recommended future-looking data storage strategy that takes advantage of tiering and cloud services.

One of the largest impact activities in this area is to implement an archiving solution that removes stale data from servers and moves the data to cheaper storage options. Typically, without a clear strategy, over 70% of data stored on file shares has not been accessed for over 3 years. Archiving moves the files offline to a cheaper storage option, but in a transparent way to the user – so it looks like the file is still in the same place it

has always been. This has significant benefits for the management of backups and disaster recovery capabilities.

4.1.4 Office 365

It is recommended that the Town evaluate the move to Office 365 – Microsoft's cloud-based office system. Initially, email services should be moved into the Microsoft cloud, providing a range of features, including flexible remote access from a variety of devices and larger mailboxes, whilst reducing management, storage and hardware overheads.

Office 365 capabilities including broader access to Office products (staff can install on various devices, including tablets and phones) will also be leveraged.

Additional features of Office 365 (including OneDrive, SharePoint, Skype for Business, Teams) and other collaboration capabilities will also be considered but require more detailed planning and consideration before being deployed.

4.1.5 Collaboration Capabilities

Encouraging and facilitating easy collaboration between staff, partners and the public is the goal. There are various tools and capabilities in the market that municipalities are taking advantage of. These include:

- Email
- Unified Communications
- Digital Meetings (voice, video, screensharing)
- Messaging / Chat
- Enterprise Social Networks
- Intranets
- Blogs and Wikis
- Collaborative File Editing / Co-Authoring
- Enterprise File Sync & Sharing (EFSS)
- Large File Transfer
- Team / Project / Partner Collaboration
- Workflow management
- Document / Content Management

Following on from the Office 365 assessment, the Town should determine its overarching approach to collaboration technologies. While the Town has the Hub as a corporate SharePoint based Intranet (which will also undergo a review) to facilitate some aspects of collaboration, SharePoint and Office 365 may address some needs, but may not meet others. The Town should determine which areas of collaboration are important (for example, unified communications, digital meetings, collaboration spaces and EFSS) and then should determine which tools are suitable for the Town to adopt and implement.

4.1.6 IT Service Continuity Strategy

The Town must be more prepared for business continuity in the event of an incident impacting the Town's data centre. Although it may seem unlikely, events do happen – for instance the County of Huron technology systems were heavily impacted when a tornado damaged the County building in which their data centre was housed.

We recommend that a formal IT Service Continuity plan should be developed, including a technology disaster recovery response plan that identifies the priority systems that must operate in the event of an emergency and the order in which systems should be recovered.

In the past, municipalities built their own disaster recovery sites, but today municipalities are typically implementing Disaster Recovery as a Service (DRaaS) – with hosted service providers as the most cost-effective approach. It is recommended that the Town follow the DRaaS approach.

4.1.7 Security Assessment and Managed Service

The Town has obligations to keep its information secure. Reading the news in 2018, shows how important security has become – for instance, the Town of Wasaga Beach was recently hit by a ransomware attack.

Thus, it is recommended that the Town undertake an external Security Assessment to assess its current security posture, gaps and vulnerabilities.

Because of the challenge keeping up with security threats, rather than creating a new position in IS to lead security, it is recommended that an external security firm be retained to conduct ongoing security operating activities – monitoring, alerts, security assessments, and to provide advisory services.

In addition, annual security re-assessments are planned to confirm the current situation and identify improvements. It should be clear that information security is an ongoing concern, which will require sustained funding and attention to maintain a secure environment.

4.1.8 Ongoing Maintenance Activities

It is important to note that these major technology initiatives are in addition to a range of ongoing infrastructure maintenance activities, which includes network and switching hardware renewal, end user device replacements, and storage technology replacement. Each of these initiatives will mitigate corporate risks, are critical to maintaining operations and must be planned and resourced as part of the annual IS Division's work plan.

4.2 Major Business Solutions

The Town has several major gaps in its business systems platforms that will be critically important to address over the coming years.

4.2.1 Work and Asset Management Systems

The Town, like many municipalities is investing in Asset Management, and strategies to effectively and sustainably manage the lifecycle of its assets. There are two core systems associated with Asset and Work Management which the Town should invest in:

- A Work Management System. These systems are needed to effectively track assets and the work that is done against the assets (inspections, planned maintenance and reactive work). These systems typically involve asset registers, service requests, work order management, GIS integration, mobile systems access for field crews and online service request deployment. They help improve the productivity of crews and provide management information about resource allocation and utilization. Typically, these systems may be used for linear (road, water, waste and storm water), facility and fleet assets.

- Asset Management Systems. These solutions typically include valuation, planning and decision support tools, and they help the Town more effectively plan asset management activities to predict future funding needs, to model scenarios and to achieve and/or prolong the lifecycle of assets.

It is recommended that the Town develop its detailed requirements, and then determine the solutions (and the integrations) that will be required to meet those requirements. There are significant systems, data and process integration issues that need to be tackled to address this initiative effectively. This is a large program of work that will be a multi-year endeavour to implement the initial solution, and that will likely take five years or more to become fully adopted across the Town.

As part of large projects such as these, it is important to focus upon business process design. As an illustration, the City of Cambridge (a municipal leader in work and asset management) rationalized their work management processes into 12 common process (Service Request, Work Order, Inspection, etc.) before implementing their Work Management solution. This achieved significant productivity benefits and reduced overall implementation costs; a strategy that the Town could follow.

Also note that implementation of these types of systems requires operational resources to train and support, sustain and evolve the solution. Kitchener, for example, has three staff members in the Operations Division dedicated to supporting their Cityworks implementation, alongside two staff in IT.

4.2.2 AMANDA Enhancements – Mobile and Digital Services

The Town has long used Amanda as a consolidated business process management tool for building permitting, and various other activities. Amanda is well suited for use

around land management, property and professional licensing processes. This is one of the Town's core platforms – and is expected to be so for the foreseeable future.

The intent is to implement online permitting and digital plans submission. The initial focus is around building processes, with the plan then to extend online and mobile capabilities implemented for building to other business areas.

To achieve this, there is a need to upgrade to Amanda 7. Before implementation of the upgrade, existing building business processes should be reviewed to ensure that a) they are up to date, streamlined and effective and b) they will support the intended online permitting processes. Data cleanup work is also required around people and property records.

Once the online capabilities (including digital plans submission) has been implemented in building, these capabilities can be expanded to other business units – such as licensing, bylaw enforcement.

One large area that will require significant attention is Planning. While some processes were designed for Planning some time ago, use has not been high. It is recommended that Planning business processes be re-implemented in Amanda – a major project, for which funding of departmental resources to provide subject matter expertise is critical to allow the project to go forward.

4.2.3 Tax System Replacement

The Town's Tax system is reaching the end of its lifecycle and it must be replaced. The Town will develop requirements, and then look first to existing systems that it already operates such as Amanda and Great Plains to determine whether these systems can meet the Town's requirements, before going to market for another system.

4.2.4 Payroll and HRIS Strategy

The Town is currently implementing a new Payroll system, which will modernize for staff the tracking of time and attendance, leave requests, etc. These are some of the moments that we noted in Section 3.2.2 Modernize Employee Experiences (EX). The system being implemented has the capability to provide a range of other capabilities to support HR management processes. However, before the Town proceeds to implement further modules, it is recommended that a clear HRIS strategy and roadmap be developed and forwarded to the CTGC for approval.

4.2.5 Great Plains – ERP

Despite major enhancements and investments into Great Plains through the recent SPIRIT project, it is important to acknowledge that a) there remains some dissatisfaction with the capabilities, functionalities and robustness of the system, and b) there is some dissatisfaction with the support of the system provided by the vendor.

Nonetheless, given recent investments, it is recommended that the Town continue to use Great Plains and work to augment its features through add-ons and separate systems that can be integrated. Integration with the new Asset Management system, and improvements around payment processing are key projects.

The Town should plan, as it should for all of its systems, a replacement lifecycle for Great Plains. In 2022/23, it is recommended that there be a review of Great Plains to determine a future strategy. Note that in our experience, municipalities that are currently implementing robust Enterprise Resource Planning Systems that integrate core business functions such as those related to financial management have been budgeting between $5 – 10 million, and more for the project.

4.2.6 Enterprise Content Management (including Document and Records Management)

Earlier in the document, the collaboration strategy was referenced. This has an intersection with the ECM project – but it is recommended that collaboration work proceed ahead of the ECM project due to the size and complexity of the ECM project and the pressing need to improve collaboration capabilities. In due course, at the later stage of the strategy, Clerks and IS Divisions should partner together, and with other key stakeholders – legal and business units – to develop a corporate ECM strategy that defines the scope and strategic approach to developing, deploying and integrating a corporate ECM solution. This is a large project with significant impacts across the organization given the potential for moving away from file shares and folder structures, to a more structured environment that attaches important metadata to files at the point of creation.

The scope of the ECM strategy should be broad, encompassing collaboration capabilities, document and drawing management (submission, markup) digital assets and records management. Intranet requirements may also be considered as part of the ECM strategy – depending upon the directions set by the collaboration strategy.

The ECM strategy should define an implementation plan and phasing approach that would allow the build out and integration of the ECM with other core systems, whilst implementing appropriate records retention plans to allow the Town to effectively manage its long-term storage needs.

4.3 Integration

4.3.1 GIS Strategy

The development of this plan didn't permit sufficient time to detail the future GIS strategy. While the Town's GIS capabilities are strong, there are significant opportunities to leverage GIS more broadly. GIS resources are currently limited, and this strategy envisions a broadening of the role of the GIS group to focus more on data and analytics. As well, the implementation of the Asset and Work Management systems

will significantly impact the GIS area. It is recommended that the Town develop a separate corporate GIS strategy to define the roadmap for GIS.

4.3.2 Integration Technology

The Town needs to increase its capability around systems integration, and to simplify integration implementation and maintenance – to improve data integrity and to reduce manual work. It must become easier to implement and maintain integrations and interfaces. Increasingly those interfaces will need to operate across onsite and cloud-based environments and be web-service based. It is recommended that the Town implement integration technologies to simplify integration development and support.

4.3.3 Data Standards

Given the importance of data to the organization, and the potential around analytics, the Town must focus attention on data standards and its data architecture. Defining data standards around Assets, People (customers and employees) and Location (address, streets) are the areas that will have the highest impact and will be supportive of planned or inflight projects such as CRM and CLASS replacement, Amanda and Work and Asset Management projects.

4.3.4 Business Intelligence / Dashboards

As discussed in Section 3.2.5 Use Data to Inform and Improve Service Delivery, the Town can use data that it currently collects to inform decisions and improve services. Closely monitoring performance through dashboards helps ensure that areas that require management focus get the right level of focus. By conducting deeper analysis of occurrences, distributions and patterns, the Town can understand policy and service delivery impacts and adjust accordingly. But, to tie information across various systems together requires tools to do that. Investments in Business Intelligence and dashboard technologies (and the supporting programs, skills and education) are required to support the delivery of these capabilities.

The initial focus in this area will be around internal performance reporting. Defining Key Performance Indicators (KPI's) to monitor and manage performance in business areas will be critical. These capabilities will help identify the data that the Town needs for its effective management (adding weight to the drive for further digitization) and will grow the Town's data maturity (its ability to work with data and use data to inform improvements). Over time, internal dashboards will become public dashboards, which will increase transparency and confidence.

4.4 Customer Facing Solutions

4.4.1 Web Environment Review

The Town's Web Content Management System has been developed by in-house staff, based on SharePoint. There are some risks associated with this custom developed software strategy, and thus the broad recommendation to move away from self-developed solutions to off-the-shelf products where possible. Given recent updates to

the website, it is recommended that in due course the Town conduct a review of its web platform needs and determine the future web management strategy – which should likely be based on a hosted environment, rather than an in-house hosted system.

4.4.2 Customer Relationship Management (CRM) System

It is recommended that a modern CRM solution should be pursued by the Town that provides case management and workflow capabilities, integrates with web and smartphone channels to enable customers to self-serve, includes dashboards and management metrics, and gives Management and Councillors the ability to track and monitor complaints and their resolutions.

However, we would note that a CRM solution is just one part of a broader Customer Service Strategy. The Customer Service Strategy should define what customer service for the Town will look like: a centralized customer contact centre vs. distributed call centres, should define customer service standards and identify customer service channel priorities.

So, while the Town does need a CRM, it is strongly encouraged to develop a corporate Customer Service Strategy and determine its customer service approach before investing in CRM technology.

4.4.3 Online Services

The focus of this strategy is not upon delivery of online services, there is too much work in other areas to focus in this area at this time. Nonetheless, as a by-product of delivering some back-end business solutions, the following new online services are anticipated:

- Customer submission and tracking of service requests (as part of CRM project)
- Tax account management self-service (as part of Tax project)
- Permitting and licensing online management – digital drawing management (as part of Amanda expansion)
- Development planning portal (as part of Amanda expansion)

5. Organization of Technology Resources

As has been discussed earlier, to prosper with technology, the Town needs a high performing team and tech savvy business leaders and staff. While the IT team is performing well, and has some very skilled resources, the team is currently overwhelmed with workload and the findings indicate that the IS Division is under-sized in comparison with best practices and comparator municipalities.

In order to implement and support the technologies and strategic directions envisioned by this strategy a series of changes to the IT organization are recommended.

5.1 IT and Departmental Functional Responsibilities

First, the functional model below identifies the work that a municipal IT department must undertake, and the roles that departments should be responsible for.

It also clearly defines the activities that business units should be responsible for, and explicitly identifies work that should not occur outside of the IS Division.

IT Responsibilities	Departmental Responsibilities
Strategic IT Service Management • IT strategy & planning • IT performance measurement and reporting • IT financial management (budgeting) • IT Business Relationship Management • IT Policy and standards • Risk and compliance management • Vendor & contract management (in partnership) • Technology Training and Education program coordination Client Services • Incident Management -1st level technical support (including knowledge base management) • Identity Management -User account management (AD and systems) (creation, deactivation, group membership) • Request Fulfillment - for standard services including: Productivity software support, Device (PC, laptop, tablet, phone) and	• Ongoing engagement and active partnership with IT Business Relationship Management program • Partnering with IT in the planning for all technology solutions that store town data or are accessed across the town's network • Active project accountability, leadership • Commitment to adequately resourcing initiatives and ongoing systems with power users and Subject Matter Experts (SME) • Simple business system configuration & end-user work flow configuration (not including user lifecycle events) • Understanding and keeping up to date with business systems capabilities and how to leverage the capabilities • Driving the utilization of business systems in business areas and aligning systems to business needs • Business systems testing (upgrades, software changes)

peripheral (scanner, printer, etc), Software access provision and package deployment, A/V support, Mobility support, • Asset management, license management, inventory, procurement incl. fulfillment and onboarding • Service catalogue management Infrastructure Services • Responsible for Technical Management (Infrastructure design, build/ acquire, test, operate and discontinue). • Technology architecture (including standards and roadmap) • Network (WAN, LAN, Wi-Fi) Telephony, mail, messaging, unified communications • File and print infrastructure, • Computing platforms (including servers, workstation, tablets, etc.), • Remote access and mobility technology, • Cloud infrastructure solutions, • Security defense (e.g. firewall, IPS, a/v, malware, spam), • Data Centre, • Backup and restore management, • Disaster Recovery operation (IT Service Continuity Management) Business Systems • Responsible for Applications Management (Business Systems design, build/acquire, test, implement, operate and discontinue). • Solutions architecture (including standards and roadmap) • Systems planning, • Systems integration and middleware (incl. with business partners, customers, and agencies), • Enterprise and expert applications,	• Business process ownership, design and re-design • Leading adoption and change management programs in support of systems implementation • Leading the delivery of training for business systems • Data stewardship, data management and data editing activities • Data analysis, analytics and reporting • GIS data management • GIS exploitation / utilization • Participation in vendor relationship management in partnership with IT • Note: Coding & development work, technology procurement (software, hardware and services) and systems architecture work should not occur in departments, excluding any formally agreed exceptions.

• Web & digital solutions, • Cloud business solutions, Planning & Project Delivery • Project portfolio management including intake of technology projects, • Project management for technology projects • IT resource management and planning, • Monitoring and reporting across the IT project portfolio. • Responsible for IT Business Analysis function including: IT Business Cases, Business Requirements (including process/data models), Selection Criteria/Build Specifications, Test Plans to verify user requirements, GIS • GIS technology and data architecture • GIS technology design • GIS systems planning and management • Integration of GIS and non-GIS systems • GIS data acquisition and exchange • GIS operations – including GIS core data management, mapping and analytics on-demand • Enablement of divisional / departmental GIS analytics, mapping and reporting • GIS education and training program • BI framework, Data warehouse management, and Master Data Management, • Enterprise Dashboards, Enablement of divisional / departmental analytics and reporting.	

5.1.1 IT Roles

The functional model defines the roles that the IS Division is expected to fulfill and is a guide for today and the future. The key areas where we see change required include:

- The IS Division must take a stronger lead on architecture and how technologies fit together. This means that all technology proposals be assessed against the current and planned architecture (in this case the MTA will initially be the target architecture, but the Town will evolve this with additional technology standards), before securing approval to proceed.
- Moving forward, Project Management and Business Analysis services for technology projects should be provided by IS – and thus IS should be sufficiently resourced to provide those services, or enabled to contract for these resources as needed
- Portfolio management – IS should be responsible for tracking technology ideas, concepts and projects and reporting on the status of the portfolio to the CTGC.
- Resource management – IS will be responsible for monitoring the resource capacity of the Town (both in business units and in IS) and advising CTGC on the capacity to tackle technology initiatives

5.1.2 Departmental Roles

In some respects, the roles of IS and departmental staff have become a little blurred over time. The functional model, identified in section 5.1, is intended to provide clarity with regard to expectations around technology.

But it is important to note that successful technology is delivered through partnerships - effective partnerships between departmental leaders that want to drive business change, and technologists and subject matter experts that can help translate and execute the vision.

Management in departments have a critical role to play in the successful adoption and change management associated with the implementation of a major technology and process change. Technology projects should not be done to you by the IS Division. Departments and IT must be *partners in change*, in fact other teams such as HR may also be involved as partners in change.

Thus departments – specifically managers and supervisors in divisions must:

- Lead from the front, identify your business vision
- Engage with IS early with business problems – not finalized solutions, work with IS to understand how technologies can support your vision
- Define clear business outcomes (reduce average time taken to address customer enquiries by 25%, or reduce turnaround time on permit issuance by 3 days not: implement a CRM system or implement a permitting system)
- Commit to understanding the complete problem / opportunity before committing to technology
- Own and drive business process design, change management, training and adoption of technology within your teams

- Allocate project resources to projects, and establish ongoing roles for super users / champions of technology after projects are complete
- Be open to and prepared to handle operational implications of solution implementation such as job role changes, service changes that may be necessary to achieve the transformed outcome
- Drive the use and business solutions and their ongoing evolution in partnership with IT

Note that the functional model explicitly identifies that software development, coding, and technology procurement should not occur outside of the IS Division.

5.2 IT Organization Structure

Because of the recommended growth of the team, the reporting structure also needs to change, as it will become impractical for the IS Manager to directly supervise all IT staff. Thus, there is a need to establish an organizational structure – which is indicated in.

The following table identifies the organizational groups suggested, which aligns to the functional responsibilities in the previous table.

Area	**Functional Responsibilities**
IS Manager	Strategic IT Service Management
Business Analyst Team	Planning and Portfolio Management
Technology Operations Supervisor	Client Services Infrastructure Services
Business Solutions Supervisor	Business Systems Services
GIS and Data Supervisor	GIS Management + data activities

The organization diagram in Figure 8 over the page identifies the proposed organization chart for the Information Technology Division – which represents the recommended organization for 2021 - 2022.

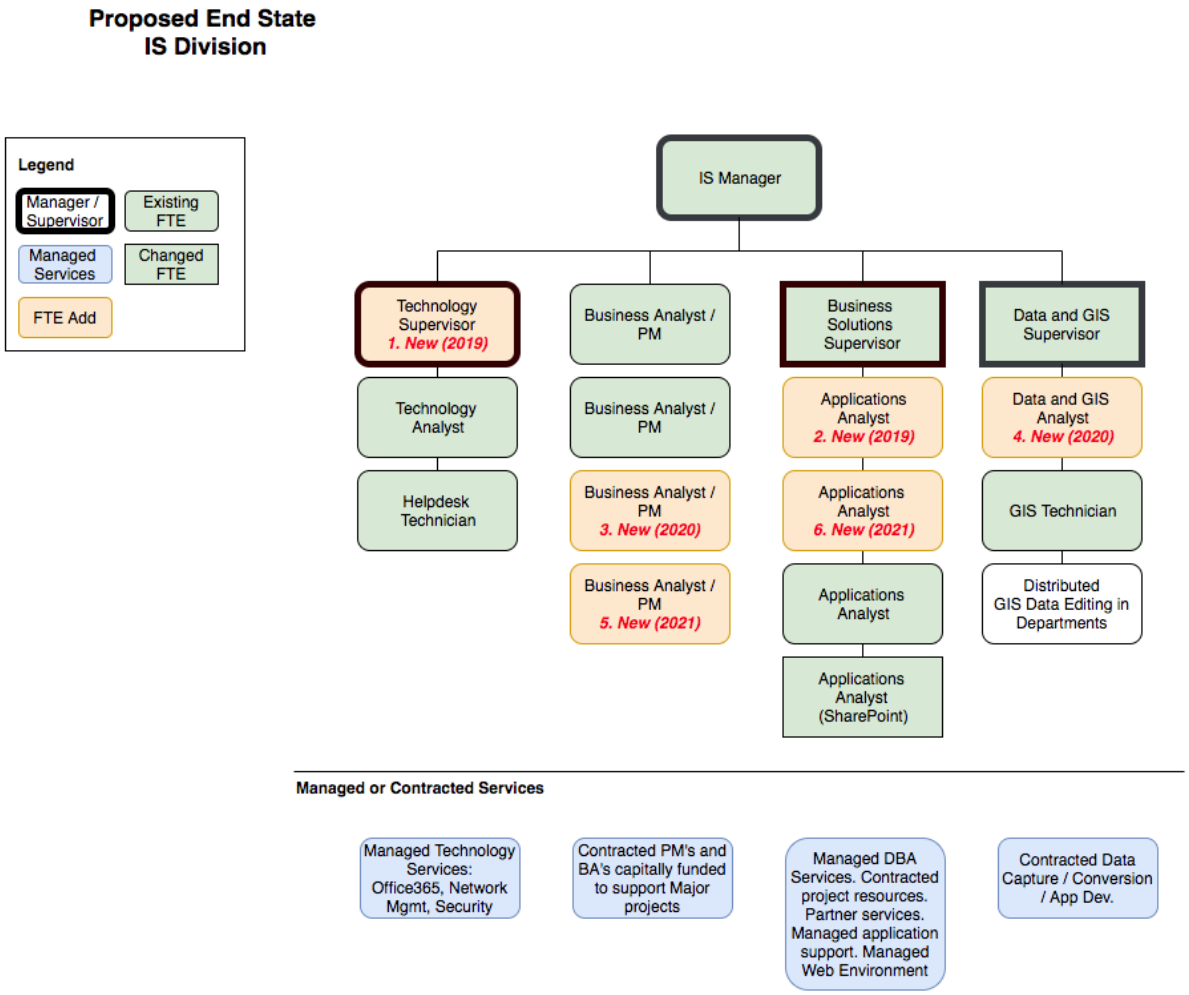


Figure 7: Future IS Organization Structure

The recommended restructuring includes a series of changes to existing positions, and the addition of new IS positions. As the Town has some catch up to do regarding IS resources, the strategy recommends the addition to the team at a rate of two per year over the next three years.

Note also that the diagram identifies areas (in blue) that it is recommended that the Town should use contracted and managed services to augment IT staff.

The recommended changes are discussed further below:

5.2.1 Existing Position Changes

It is recommended that some existing roles change, either in reporting relationship or scope of responsibilities. It is specifically recommended that the Web Systems Developer-Coordinator position, currently in Corporate Communications, be repositioned as soon as possible to be part of Information Services. This change will enable the Town to maximize significant skills and experience and ensure software

development activities are contained within the Information Services section. These changes will impact operating costs as roles are regraded to match new responsibilities.

5.2.2 New Positions

Several new positions have been identified and are expected to be phased in to achieve the recommended structure. Each will be proposed through the annual budget process.

Year	Role	Description
2019	Technology Supervisor	To free the IS Manager up from operational work, the Town requires additional resources to support the IT infrastructure. The Technology Supervisor will be responsible for overseeing the planning, management and support of the technology infrastructure, including coordinating vendor service provision.
2019	Applications Analyst	To effectively support existing business systems and the integrations that the Town plans to implement, the IS team requires additional Application Analyst expertise.
2020	Business Analyst / PM	The Business Analyst's primary role is to build strong relationships with business units. In this role, they will support departments in identifying business requirements for technology related projects and lead the implementation of projects. They fulfill this by applying the principles of business analysis in the requirement gathering, planning and re-engineering of business processes and practices and convert these requirements into technology requirements
2020	Data and GIS Analyst	To support the increased work around GIS and expansion into data management, data analytics and business intelligence – a Data and GIS Analyst is required
2021	Applications Analyst	To support new business systems that the Town plans to implement (e.g. CRM, Work and Asset Management Systems), the IT team requires additional Application Analyst expertise.
2021	Business Analyst / PM	The Town will need to add an additional BA/ PM role. See Above for the details of the role.

It is recommended that the Town's IS Division be intentionally resourced for

a) leading technology strategy and priority setting,
b) helping business units understand business challenges and opportunities
c) architecting how solutions fit together
d) planning the implementation of technology solutions

e) working with vendors, partners and contractors to implement solutions, and
f) supporting and operating solutions that have been implemented.

New projects will require resourcing to support their delivery and future operation – and it is recommended that for many initiatives that this be through contract and third-party resources, used to augment internal resources.

5.2.3 Resource Augmentation and Utilizing External Expertise

The reality of modern IT, particularly with small municipal teams, is that maintaining the necessary skills and capacity to plan, implement and manage all the Town's increasingly complex technical environment and burgeoning project demands in-house is impractical. To do so would mean hiring an unfeasible number of additional IT staff.

Smart IT organizations approach this challenge by relying on a team of in-house IT staff with strong internal connections and understanding of the organization's business needs (business partners), who in turn work with a network of trusted partners, vendors and solution providers to deliver the required services.

Similar to the way that the Town approaches road building and road maintenance; relying on construction firms with road building expertise - the emphasis is on "getting projects done", or "project throughput" rather than on IT staff necessarily implementing the technology themselves.

This is 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 IS Division, the IS Manager and supervisors begin to work as coordinators or orchestrators of IS service delivery – which will be executed by a combination of internal staff and external providers.

The Town's goal is to increase speed, agility and project throughput by using the right mix of resources and skills for the job at hand. Several approaches are common in municipalities for augmenting internal IT resources, including:

Capital Funding Contract Staff Positions

Projects are proven to be successful when staff can be dedicated to the project – not working off the side of their desk.

To achieve this level of dedicated attention to projects municipalities commonly use contracting for short term staff (1 – 2 year contracts). Costs for staffing contracts are 'bundled' into the total capital cost of the project. Thus, when projects are approved the appropriate staffing to execute the project is also approved.

Contract staff may be used directly on the project but are more typically hired to backfill IT or subject matter experts in business units, freeing up internal staff to work on

projects. This allows the Town to retain the accrued project learning and expertise, and to offer development opportunities to internal staff.

Vendor of Record (VOR) – IT Resources on-Demand

Because of the regular need to bring in additional IT and subject matter business resources to support project activity, numerous municipalities (e.g. Richmond Hill, Guelph, Mississauga) have embraced a roster or Vendor of Record (VOR) model. In this approach, the Town would have an arrangement with one or more firms that can supply experienced Project Manager, Business Analysts, network or security specialists, GIS experts and other technical resources to the Town, on-demand at pre-set rates.

Funding for a VOR resources are also included as part of a project capital request and this can enable the Town to quickly ramp up resources to lead major projects such as ERP, Work Management or CRM.

Service Providers: Out-Task Some IT Services

While wholesale IT out-sourcing is extremely uncommon in the municipal sector due to the complexity of municipal business, the Town should adopt selective out-tasking as a strategy to augment internal resources – reducing the need to add new IT staff.

As discussed, there is only one staff member allocated to managing the infrastructure. The IS Manager has to be actively, hands-on involved in the day-to-day management and support of the Infrastructure.

In order to free up the IS Manager, and because of the commoditized nature of IT infrastructure, this is the area where this out-tasking will have the highest value and impact. Thus, the Town should use competitive purchasing processes to secure managed service partners that can manage network, security and other infrastructure services on behalf of the Town.

The IS Division will be the orchestrator of IT service provision, matching the needs of the organization to service delivery – either provided internally by IT staff or by 3rd party expertise. Who provides the service will be entirely transparent to Town management and staff.

Use External Expertise to Plan, Design and Set Strategies

Setting strategies before tackling projects is critically important to successful outcomes (measure twice, cut once). Fully exploring possibilities before diving in is essential. In this area, there is clear value in engaging experts in the right measure, at the right time. Consultants with deep domain experience and with experience in developing strategy and implementing solutions can help to guide the Town in developing plans that properly leverage systems' capabilities to address business challenges. The Strategy recommends several budget allocations to engage consulting resources to do just this.

Leverage Strategic Partnerships

Although the IS Division is capable of designing and building great solutions, it doesn't always mean that it is always the right approach. Looking forward, strategic decisions are needed regarding whether the Town is best suited to build and deliver a solution or whether another partner (in the public or private sector) may be better suited to address a need.

Public Wi-Fi is a good example of this, with different municipalities taking different approaches.

Some have built their own Public Wi-Fi networks, committing their own resources and time to the work. In this area, Mississauga has partnered with Sheridan college, due to their expertise in providing Wi-Fi to over 20,000 students at campuses across the GTA. Sheridan provides and supports the Wireless Mississauga service. Burlington has partnered with the local telco – Cogeco – which now provides public Wi-Fi in City facilities and in parks and other civic spaces.

In both Mississauga and Burlington, partnerships with organizations with strong expertise have allowed citizens to receive a great service, from providers with deep expertise, whilst IT resources can focus on other areas that are core competencies for them.

Given the pressures on internal IT resources, the Town should think strategically around the opportunities for partnership as it considers technology opportunities.

Continuing to work, as the Town already does, with the Region and other municipalities in the Region to piggy-back on purchases and explore opportunities for joint project implementations is another example where the Town can gain value through strategic partnerships.

5.2.4 Reduce In-House Development

The Town has, to a large extent, avoided developing software in-house; however, there are some examples such as the Town's Content Management System that manages the website. The Town should in future avoid the development of in-house software, in preference for using off-the-shelf products and solutions.

5.2.5 Library

The relationship between the Library and the Town from a technology basis is somewhat at arms-length. Some aspects of technology are managed by the Town, others are managed locally by Library staff, and others still are managed by third parties.

While the library's patron's needs and requirements around public computing, for example, are very different to those of the corporate technology environment – some technology infrastructure and management could be common and shared. Disaster

recovery, security, firewall management, network management are some potential examples. As the Town moves towards increased out-tasked management of infrastructure, there may be benefits to offering single contracts for the Town and the library that the Town's IT team could oversee.

It is recommended that a formal assessment of opportunities for convergence between the Library and the Town's IS Division should be conducted (that looks at technology, staffing and budgets and funding models). The recommendations should explore and provide clear recommendations upon the viability of, and if appropriate, a pathway toward a more converged environment over time.

6. Implementation Plan and Budget Implications

6.1 High Level Implementation View of Major Initiatives

The following timeline identifies the major and strategic activities that are recommended for the next five years. Few initiatives are earmarked for the last year, to accommodate slippage and to acknowledge that planning five years out in technology terms is challenging.

Additional initiatives are also planned (but not shown in the summary below) – see the detailed work plan in Appendix A for more information. This table highlights the key activities.

New items should also be anticipated, and these will be handled through the newly defined intake process to support the improved governance process, but this should provide the general framework for the major activities that the Town should tackle over the next five years.

Year	Implementation Activities
2018	Governance and Processes • Establish CTGC and supporting governance teams • Project selection process • Portfolio monitoring / reporting • Begin policy review Technology • Windows 10 rollout • Office365 assessment Business Systems • Amanda enhancements to support online services (building process, people, property cleanup) • CLASS replacement • Payroll system implementation • Fire CAD migration • AVL system • Master Data Management – Address (specifically focused upon address data cleanup in Amanda) IT Management • Web Developer / Coordinator moved to IS • DBA role repurposed to Supervisor Business Solutions
2019	Governance and Processes • Continued evolution of governance processes • Project management process

Year	Implementation Activities
	• Annual Council updates begin Technology • Storage tiering • Data centre facility improvements (security / business continuity) • Network assessment, strategy and managed service transition • Public Wi-Fi improvements • Network infrastructure lifecycle replacement • Office365 pilot projects • IT Service Continuity strategy • IT security assessment and managed service transition Business Systems • Amanda 7 upgrade and launch online permitting and electronic plans review • Asset Management system implementation begins • Tax replacement • AVL system • Customer service technology architecture • Master Data Management – Assets IT Management • New Technology Supervisor • New Application Analyst • Establish roster and contract staffing models for on-demand resourcing technology initiatives
2020	Governance and Processes • BI and Dashboard strategy • GIS strategy Technology • Windows server upgrades • Office 365 rollout Business Systems • Amanda – Planning re-implementation • Ongoing Asset and Work Management systems implementation • AM and GP integration • POS systems review • HRIS systems expansion • Master Data Management – People • CRM system implementation (dependent upon the completion of customer service strategy) • Website technology refresh

Year	Implementation Activities
	IT Management • New Business Analyst / Project Manager • New Data and GIS Analyst • Library technology convergence assessment
2021	Technology • Lifecycle replacements Business Systems • Amanda – online service expansion and other mobile capabilities • Ongoing Asset and Work Management systems implementation • Online service expansion – tax, customer service requests • ECM planning • Open data • GP Review / Fit-Gap Assessment • BI / dashboard technologies IT Management • New Business Analyst / Project Manager • New Applications Analyst
2022	Business Systems • ECM implementation • Online services – services to be provided to be defined

A more detailed work plan is included in Appendix A – Work Plan.

6.2 Budget Implications

All project costs have been estimated by the consulting team. However, it should be noted that these are order of magnitude estimates. Following the approval of the strategy, all proposed projects will go through the recommended due diligence process to fully evaluate the costs, resource needs and ongoing financial and resourcing implications, before being submitted through the annual budget process.

Thus, approval of this strategy would not approve the projects, nor the budgets identified, rather approval would support the trajectory and strategic directions proposed by the strategy.

The following table identifies the budget requirements to support the recommended strategy, this includes software, services and in a number of cases contract staffing costs to allow for backfilling of subject matter experts – as recommended by the Strategy.

	Capital ($,000)	Annual Operating Increase ($,000)
2019	1,255	437
2020	1,415	550
2021	760	265
2022	565	105
Total	**3,995**	**1,357**

Note that because the Town has a significant volume of major business solutions projects to tackle, the work is front-loaded – resulting in a higher capital investment in the first half of the plan.

The CTGC may choose to defer some projects to smooth out the investment profile.

7. Conclusions and Major Recommendations

Council's first strategic priority is around *Municipal Service Delivery - effective, efficient and economical delivery of the Town's existing services.*

To be *effective, efficient and economical* requires the strategic application of technology. It requires digitization of business processes to ensure optimum efficiency. It needs staff to have the tools and technologies that help them seamlessly collaborate and access streamlined internal services. It requires the implementation of mobile technologies that connect field staff to the back office and citizens, and it requires the deployment of online services that empower and enable citizens – allowing them to interact with the Town anywhere, anytime.

The assessment of the current situation indicated a number of areas that the Town is falling short of at this time that require attention if the Town is to achieve Council's goal.

The strategy recommends a focus in two areas:

- Elevating the importance of technology
- Leveraging technology as an enabler of modern business practices

The recommendations are that the Town should:

1) Elevate the importance of technology, by:
    a. Maintaining the new IT Governance structure to engage senior leadership in setting the strategic direction and priorities around technology
    b. Updating the project evaluation and selection process, to ensure that the Town commits to a realistic number of priority projects per year
    c. Implementing project and change management methodologies to improve project outcomes
    d. Increasing capital and operating investments in technology by exploring alternative funding sources such as Development Charges, Building Permit Reserves and the Gas Tax
    e. Evolving stronger tech savviness through IS leadership, governance, engagement and communication, training and education
    f. Equipping the IS Division to make a significant contribution by reorganizing existing IS resources, clearly allocating roles and responsibilities and freeing the IS Manager from day-to-day operational responsibilities to focus on strategic areas.
    g. Investing in new IS resources by adding six IS staff over the next three years, with the goal of positioning IS as a strong business partner help business units apply technology in a transformational way
    h. Leveraging industry expertise by using outsourced service providers to manage key areas of technology infrastructure, freeing internal resources to focus on technology coordination, and strategic direction setting

i. Capitally funding contract staffing in business units and IS to support project delivery

2) Leverage technology as an enabler of modern business practices by:
    a. Digitizing business processes through the implementation of a range of new business systems technologies, including:
        i. Perfect Mind – online program and facility booking
        ii. CRM – customer relationship management, providing online case management
        iii. Asset and Work Management Systems – effective management of work against assets and mobile technology to enable field crews
        iv. Payroll and HR system – employee self service
        v. Tax system replacement – modern tax system, including online account management
        vi. Amanda 7 upgrade and online services, electronic plans review and mobility
        vii. Business intelligence and dashboard capabilities – increased insight into operations, performance and policy impacts
    b. Modernizing employee experiences
        i. Improved device choices – laptops, tablet, smartphones
        ii. Office 365 – Mail / Calendar / Collaboration– modernized, cloud based system
        iii. Remote Access – increased flexibility of working options
        iv. Collaboration – enhanced ability to work collaboratively, dealing with documents and web meetings
        v. Wi-Fi – enables more productive meetings and connectivity
    c. Providing mobile technology to field based staff – via Amanda and Asset and Work Management programs
    d. Adopting Cloud services and solutions
    e. Using data to inform and improve service delivery
    f. Increasing digital delivery of town services

The work plan sequences the recommended implementation over the next five years.

To be successful with this strategy, there needs to be an understanding of the increasingly significant role of technology in delivering services effectively and efficiently. Focusing on the priorities identified within this strategy and investing in IT resourcing at suitable levels will enable the Town to meet the needs of staff, leadership and its customers.

Technology needs to be central to how the Town approaches business challenges, opportunities and improvements. The SMT must continue to be actively involved in championing the technology agenda and driving technology improvements into all business areas – while securing sufficient resources and funds to realize its vision.

As the Town readies to support the build out of Vision Georgetown, and the influx of the associated population, this investment in technology has never been more important.

Appendix A – Work Plan

The following table lists the recommended initiatives, cost estimates, and suggested timing.

ID	Project	Dep	Description	Benefit	CapEx ($)	Op Ex	Resp	18	19	20	21	22
Governance												
1	Operationalize recommended governance groups		Operationalize CTGC and T-PEC groups in support of 2019 budget process and 2018 annual work plan delivery	Executive focus on technology to set and monitor priorities	0	0		X	X			
2	Implement project selection and monitoring processes		Implement and evolve processes to support project intake, evaluation, selection and project portfolio reporting, IT KPI / performance reporting	Project volume matched to capacity, leading to improved outcomes for projects	0	0		X	X			
3	Operationalize project management best practices		Implement standardized project management methods and supporting playbooks (e.g. change management, business process design), provide training	Improved outcomes for projects	20K	0			X	X		
4	IT Funding Review		Review IT reserves and options for funding IT	Sufficient funding for IT	0	0			X			
5	Annual council updates		Prepare and deliver an annual report to council on the status of the IT strategy and the value delivered through technology	Council level awareness of the value of technology	0	0			X	X	X	X
IT Organization												
6	Implement Organizational changes to existing roles		Re-purpose DBA position, relocate Web Developer / Coordinator into IT, re-work GIS Coordinator role	Allocate sufficient resources to technology	0	120 k		X				

ID	Project	Dep	Description	Benefit	CapEx ($)	OpEx	Resp	18	19	20	21	22
7	Progressively add new IT staff to bolster team		Annually add 2 new IT resources to the IS Division for 2019, 2020 and 2021	Allocate sufficient resources to technology	0	200k			X	X	X	
8	Establish Roster / VOR service contracts		Establish a roster / vendor of record purchasing vehicle to support the addition of IT or business resources on-demand to support projects	Ability to access resources on-demand to support project and ops work	0	0			X			
9	Establish contract staffing model		Work with HR and Finance to establish a standard process for bringing on contract resources to support projects.	Ability to effectively resource technology projects	0	0			X			
10	Library technology convergence assessment		Conduct an assessment to determine opportunities for library and Town technology convergence, from the technology and staffing perspective.	Opportunity to achieve efficiencies and improved alignment	15K	0				X		
Infrastructure												
Facilities												
11	Data Center Fire Suppression Assessment		Perform a cost-benefit analysis to determine the best approach in addressing the data center sprinkler system which is considered a risk (equipment damage)	Determine a suitable protection strategy for the Town's data centre and implement	15K	0			X			
12	Assess redundant air handling unit requirements and select a solution		Cooling is less than ideal if there is a power failure - a trailer UPS is an option	Redundancy	0	0			X			
13	Retrofit data closets in older facilities		There are issues with lack of cages, locks, etc. This needs to be	Secure IT equipment	20k	0			X			

ID	Project	Dep	Description	Benefit	CapEx ($)	Op Ex	Resp	18	19	20	21	22
			assessed and a plan developed									
14	Develop IT standards for new builds – cabling/jacks/rack/ power		This could be a certification process developed with a partner such as Activo – to be applied to new buildings – e.g. Arenas / Library / Rec / Community Centre	Establishes standards to reduce complexity and management cost	0	0		X				
Network												
15	Network Assessment and strategy		Conduct a review and develop a formal network strategy that also includes recommendations for staff Wi-Fi	Position the Town for cloud readiness and other future network requirements (e.g. video conferencing)	20K	0			X			
16	Rollout technology for critical site redundancy (e.g. Bell LTE cell services)		Leverage current vendors such as Bell to assist with developing strategic approach. Implementation over 3 years.	Sites prepared to deal with connection outages	0	15k		X	X	X		
17	Out-task public Wi-Fi support		No capacity internally to support public wi-fi –best approach is to out-task (e.g. Cogeco or other partner)	Free up IT cycles and leverage third-party expertise	0	TBD			X	X		
18	Core Switch Replacement (EOL)		Plan for replacement of core switches as part of the refresh (lifecycle) program	Core network HW upgrades	50k				X			
19	Review Firewall Support Contract (MMP)		This vendor needs to be less “reactive”. Review the contract and ensure the required services are being delivered – ensure that a quarterly review is being undertaken.	Higher level of service	0	0		X				
20	Network Managed	14	Evaluate the benefit of contracting	Network expertise	0	40K			X			

ID	Project	Dep	Description	Benefit	CapEx ($)	Op Ex	Resp	18	19	20	21	22
	Service		a third-party firm to manage the Town's network, select a partner and transition to the managed service	and capabilities without hiring a resource or purchasing software								
Storage												
21	Storage/Data Assessment		Identify stale data in production storage	Lower storage costs	5K	0			**X**			
22	Develop a Storage Tiering Strategy (incl. implementing an archiving solution)	**21**	Purchase data archiving software and use the results from the data assessment to move stale data to a low-cost tier (e.g. Azure Blob)	Lower backup times/costs, recovery times/costs, DR costs, lower risk of production data breaches	5K	10K			**X**			
Compute												
23	Develop Windows Server 2016 upgrade path		Although not currently vulnerable this must be completed by 2020 (EOL Win2k8)	Strategic planning	0	0			**X**	**X**		
Devices and Sensors												
24	Review and expand device availability options		Work with business units to review device options, increase laptop: desktop mix, and review annually	Increased flexibility for staff working	40K	0			**X**	**X**	**X**	**X**
25	Windows 10 rollout (phase 1)		Plan is to rollout Windows 10 as part of system replacement (50 – 70 in 2018) - 2019/2020 will need to see remaining upgrades due to EOL support (Win10)	Desktop upgrades	Funded			**X**	**X**	**X**		
26	High end workstation DaaS Pilot Project		Consider a pilot to test the delivery of a virtual desktop for power-users in the GIS and CAD space – to reduce workstation requirements while providing	Cost-effective approach for GIS and CAD users	0	3k			**X**			

ID	Project	Dep	Description	Benefit	CapEx ($)	Op Ex	Resp	18	19	20	21	22
			power needed.									
Essential Infrastructure Services												
27	Office 365 Assessment		Obtain services from a third-party to assess O365 readiness and cost benefit – assessment to include email, SharePoint, collaboration and content services needs	Develop a business case to migrate to O365	Funded	0		**X**				
28	Office 365 Pilot Project	**26**	Move IS staff to O365 as part of a pilot project	Focused controlled pilot	10K	2K			**X**			
29	Office 365 Rollout	**26**	Move staff to O365	Usability, flexibility and DR benefits from hosted offering	TBD	TBD			**X**	**X**		
Corporate Infrastructure Applications												
30	Third-Party Assessment - Corporate Collaboration Requirements		Hire a SME in collaboration software to help develop a corporate strategy.	Determine appropriate approach for the organization	25K	0			**X**			
31	MDM Standardization – MaaS360		As Blackberry's are removed from the organization a plan should be developed to standardize on MasS360 – decommission BES	Corporate standards – streamlined support on a single platform	0	0				**X**		
IT Policies and Procedures												
32	Develop Onboarding / Offboarding Policy/ Procedures		This should include detailed processes when a staff member leaves the organization	Mitigate security risks associated with inactive user accounts etc.	0	0		**X**				
33	Review and Revise Policy Framework with CTGC		Acceptable Use, IT Security, Backup/Recovery, Use of Third-Party and Hosted Cloud Services	Establish corporate standards	0	0		**X**	**X**	**X**		

ID	Project	Dep	Description	Benefit	CapEx ($)	Op Ex	Resp	18	19	20	21	22
34	Develop Cloud policy and standards		Acceptable Use, IT Security, Backup/Recovery, Use of Third-Party and Hosted Cloud Services	Establish corporate standards	10K	0			X			
IT Disaster Recovery and Data Protection												
35	Develop an IT Service Continuity Strategy		This should augment any existing BCP plan but it can be initiated regardless	Town Disaster Recovery Plans and compliance	25K	0			X	X		
Security												
36	Security Maturity Assessment		The Town will engage a third-party to perform an initial security maturity assessment that will evolve into an ongoing security partnership and program delivery.	Security compliance and risk mitigation	20K	0			X			
37	Security Managed Service		The Town will engage a third-party to provide ongoing security services	Security compliance and risk mitigation	0	60k			X	X	X	X
IT Service Management (ITSM) Tools												
38	ITIL Training		Provide ITIL training to select IT staff	Industry best practices	10K	0			X			
39	ITSM Solution Review	37	Review ITSM framework and determine if current Helpdesk solution (Spiceworks) can meet the requirements (e.g. online service portal, online ordering processes)	Ensure the Town is using an ITSM tool that's aligned with the business needs	0	TBD				X		
40	Change Management process		Implement a formalized process for scoping, planning, reviewing and authorizing changes to the technology environment	Reduced interruptions to service	0	0			X			
41	Standardization of other IT processes		Review other ITSM processes and procedures and standardize	Clear, documented processes	0	0				X	X	

ID	Project	Dep	Description	Benefit	CapEx ($)	Op Ex	Resp	18	19	20	21	22
Major Business Systems												
Enterprise Systems												
42	Amanda process enhancements		Interim enhancements and business process reviews to support future online services work related to Building services.	Ready for implementation of Online services + process efficiencies	0	0		X				
43	Amanda Property data cleanup		As part of the data standards work and in preparation for online services, establish a suitable integration and synchronization of property records – to include GIS, Amanda and Tax records and clean up existing data stored in Amanda.	Required to allow public to select the right property when submitting online applications	0	0		X				
44	Amanda People data cleanup		Similar to the item above, but related to People records in Amanda	Required to support online user account management	0	0		X				
45	Amanda 7 Upgrade		Upgrade to the most recent version of Amanda to access updated Public Portal functionality and potential Tax capabilities. Includes hardware updates.	Easier to use interface, new features + required to support Public Portal and Tax	125k				X			
46	Amanda – Online Building Permitting, including Electronic Plans Review	45	Implementation of Public Portal for Building Permitting (submit, track, schedule inspections), includes EPR and staffing costs.	Streamlined online services for building – customer convenience and time saving – staff efficiencies	350k	40k			X	X		
47	Amanda Planning Re-Implementation	45	Work to re-design and re-implement digitized planning processes in Amanda – potentially	Digitization of planning processes, key growth	575k	30k				X	X	

ID	Project	Dep	Description	Benefit	CapEx ($)	Op Ex	Resp	18	19	20	21	22
			using external services to assist in implementation	information captured at source								
48	Licensing and other Amanda business process review	45	Extension of public portal to other license and permit types	Streamlined online services – customer convenience and time saving – staff efficiencies	25k	10k					X	X
49	Evaluate moving Fire Inspection processes to Amanda		Evaluate potential Fire using Amanda	Shared Town knowledge about all property interactions	0	0					X	
50	Implement Fire Inspection processes in Amanda (if deemed suitable solution)		Potential implementation of Fire inspection processes into Amanda	Shared Town knowledge about all property interactions	25k	5k						X
51	CLASS → Perfect Mind		Migrate to a new recreation program and booking solution.	Required to replace EOL system	Funded			X				
52	Great Plains Upgrade		Upgrade to GP	Required to maintain application support	50k					X		
53	GP – AM integration	52	Review chart of accounts, review project costing, inventory and payroll implications, implement AM integrations to GP	Simplified data flows, elimination of manual data entry – reduction in errors.	50k	0				X		
54	GP review, fit-gap assessment and future planning, with Business Case for replacement		Enterprise solutions are typically replaced on a 10 -15 year lifecycle. As the Town's finance systems approach that point the Town should begin to assess	Future planning and understanding of future funding requirements	25k	0					X	

ID	Project	Dep	Description	Benefit	CapEx ($)	Op Ex	Resp	18	19	20	21	22
			future fit and what the future strategy should be.									
55	Payment handling and POS review and integration strategy		Review Payment handling and POS requirements and determine strategy for customer present and online payment processing	Simplification of payment handling processes	20K	0				X		
56	Payroll System implementation		Implementation of new Payroll system, including Time and Attendance, Employee Self Service	Easier to manage, digitized payroll processes, improved staff access	Funded	Funded		X				
57	Develop HRIS Strategy	56	Preparation of HRIS requirements and development of future HRIS strategy, to be reviewed by IT Governance	Determine future sequencing of HR systems implementation	20k				X			
58	Implement HRIS Strategy	57	Anticipate implementation of additional HRIS modules, including Performance Management, Learning Management	Implement sequenced roadmap	50k	50k				X	X	
59	Asset and Work Management requirements and planning		Planning and requirements gathering for asset and work management systems, to include linear assets, fleet and facilities	Clear plans for implementation, understanding potential costs and	Funded			X	X			
60	Asset and Work Management Systems implementation	59	Implementation of Asset and Work Management systems	Improved work and asset management practices	750k	125k			X	X	X	
61	Hub review and interim enhancements		Review of existing hub and interim enhancements to address key issues before potential migration	Improved collaboration + corporate	20k	0		X	X			

ID	Project	Dep	Description	Benefit	CapEx ($)	Op Ex	Resp	18	19	20	21	22
			to O365 SharePoint environment	communication capabilities								
62	ECM strategy and implementation planning		External support to develop an enterprise content management or content platform strategy for the Town	Clear strategy + understanding of costs and resource need for ECM project	30k	0					X	
63	ECM implementation	62	Implementation of recommendations from ECM strategy	Improved document and record management capabilities	500k	100 k						X
Expert Systems												
64	Tax System options evaluation		Develop requirements and assess against existing in-house solutions – Aptean / Great Plains and Amanda Tax solutions, before considering other vendor solutions (such as TXM)	Determine Tax system EOL strategy	0	0		X				
65	Tax (Vailtech) Replacement	52	Gathering requirements in 2018 (May) for 2019 budget. Expect a strategy in Fall of 2018.	Replace Tax management system, enable online tax account management + reduce risk exposure.	400k	40k			X	X		
66	Fire CAD		Migrate to a shared CAD dispatch technology environment with the City of Burlington.	Reduced technology management footprint	Funded			X	X			
67	AVL		Multi-phase implementation of a corporate AVL solution (integrated with GIS), including integration with Asset Management system	Monitor vehicle locations, share information with management and	Initial stages are Funded			X	X	X		

ID	Project	Dep	Description	Benefit	CapEx ($)	Op Ex	Resp	18	19	20	21	22
				staff for improved efficiency and cost management purposes.								
Integration												
68	Support Strategic Initiatives performance reporting work as a pilot for BI / dashboarding needs	59	Implementation of KPI collection and reporting capabilities to support corporate performance management initiatives	Increased visibility and focus upon performance	10k	5k			X			
69	Develop BI / Reporting / Dashboards requirements and Strategy		Use external resources to help the Town develop a broader corporate BI and Dashboarding strategy	Clear path forward, understanding requirements, impacts and costs of BI approach	25k	0				X		
70	Implement BI technologies	59	Implement technologies to enable Town and business units to use BI technologies for insights and analytics	Insights that drive service improvement	50k	20k				X	X	
71	GIS Strategy		Develop a GIS Strategy to re-set the GIS operating model, determine priorities and set the roadmap for GIS	Clearly defined path forward	40k	0				X		
72	GIS Architecture upgrades		A series of core systems upgrades required to support AVL and Asset Management projects -ESRI 10.3 to Portal 10.5/6 -ArcGIS Online Integration (SSO) -SQL Server Upgrade -Hardware Upgrade	Up to date, supported technology environments supporting modernized GIS paradigms	Funded			X	X			

ID	Project	Dep	Description	Benefit	CapEx ($)	Op Ex	Resp	18	19	20	21	22
			-Latitude Upgrade -Burnside Mobile Upgrade -Internal & External MapLinks (SSL) - License Manager Update (GIS, CAD, GPS, AutoTurn etc)									
73	Desktop GIS and CAD upgrades		Desktop GIS Upgrade to ArcGIS Pro and Desktop CAD Upgrade with GIS Integration	Up to date, supported technology	Funded							
74	Evaluate and implement integration technologies (e.g. FME, Boomi, Mulesoft)		Implement integration / middleware solution to simplify the implementation of integrations	Simplified, quicker, easier to maintain integrations	50k	15k				X		
75	Master data management – Property / Address		Following on from Amanda data cleanup work - Data model, data standardization and data cleanup	Required to support Asset and Work Management system	50k				X	X		
76	Master data management - Assets		Data model, data standardization and data cleanup to support Asset Management implementation. This may also include some data collection of assets required to support the AM program.	Required to support Asset and Work Management system	50k			X	X	X		
77	Master data management - People		Data standardization and integration and cleanup to support Amanda public portal projects and CRM implementation	Required to support CRM and Amanda projects	25k					X		
Customer Facing Systems												

ID	Project	Dep	Description	Benefit	CapEx ($)	Op Ex	Resp	18	19	20	21	22
78	Develop a Customer Service Strategy		Determine the Town's Customer Service strategy, including understanding the community channel preferences and priorities for customer service improvements	Set clear direction for customer service delivery approach	75k	0			X			
79	Develop a Customer Service Technology architecture		Determine the implementation architecture for portal and CRM and online payments and forms solutions – ensuring consistent identity management.	Set direction for technology implementation to support customer service strategy	Inc in project # 78	0			X			
80	Implement a corporate CRM system		Implement a CRM system for handling and tracking customer enquiries end to end	Improved customer inquiry and request process	200k	50k				X		
81	Website Refresh		Redesign and refresh of website technology environment including a move to a hosted web environment	Mitigate risk, provide additional flexibility	75k	50k				X		
82	Online Service Requests		Extend CRM system to allow customers to submit and track requests online	Improved customer service and internal efficiencies	Inc. in project #80					X		
83	Tax self service		Allow customers to review account balances, setup direct deposit and update account details online	Improved customer service and internal efficiencies	50k						X	
84	Amanda Public Portal – permitting, licensing and planning online		Provide the ability to apply for, submit drawings and pay for building permits online. Extending the capability to offer other business permits and licenses.	Improved customer service and internal efficiencies	Inc. in project #46					X		
85	Open Data		Implement an open data policy, framework and solution and	Town transparency and process	15k	0					X	

ID	Project	Dep	Description	Benefit	CapEx ($)	Op Ex	Resp	18	19	20	21	22
			publish a range of open data. The Town would likely build on the ArcGIS Online platform.	efficiency								

Appendix B – Governance Recommendations

As stated earlier, one of the primary goals of the CTSP is to create a framework that establishes the conditions for future, ongoing and sustained success with technology. Thus, many of the primary recommendations within the strategy are focused on how to approach technology and how technology is to be managed.

Technology Governance

One of the most important areas of work for the Town is to evolve its Technology Governance framework to ensure that technology approval rights are allocated appropriately so that decisions and resources are suitably aligned with corporate goals.

What is Technology Governance?

Technology governance is defined as “the processes and structures which inform, direct, manage, and monitor how the organization makes the best and most effective use of technology.”

Governance is designed to ensure that the right people are making the right decisions, at the right time, with the right information to support decision-making. In some cases, technology decision-making means collective decisions on corporate priorities; in other areas, it will involve technical decision-making on the best data storage technology or networking protocol. Thus, different groups with different skill sets will need to be involved.

Organizations often view decisions about technology as complicated, technical and “best left to the experts in IT”. However, decisions about technology often have ramifications well beyond the technology itself:

- How do we want to use technology in our business?
- What technology do we want our people to use, and how do we want them to use it?
- How much should we spend on technology?
- Which of our business processes should we direct our IT dollars towards?
- What do we need to tackle first?
- Should we do this now, or later?
- How secure do we want to be?
- What should be available first in the event of a data centre outage or a disaster event?

These are not decisions for the technologists in the IS Division alone; they are important business decisions that the leaders of the organization must address.

There will always be purely technical decisions to be made, when the right IT staff with appropriate expertise will need to be involved; but in most cases, IT experts should be advising business leaders.

An IT governance framework facilitates collaborative working, bringing together the appropriate mix of leadership and staff from departments and disciplines. The framework is made up of four elements, which are discussed in more detailed in the following sections:

- Decision-making groups and individuals (e.g. membership, inter-relationships)
- Policies & standards (e.g. architecture, software procurement policy)
- Processes & methods (e.g. prioritization, project execution)
- Measurement and monitoring (e.g. Key Performance Indicators reporting)

IT Governance Decision Making Groups

It is recommended that the Technology Governance Framework (TGF) should be comprised of the following groups/committees and individuals:

- **Corporate Technology Governance Committee (CTGC)**: a small, senior leadership group, charged with technology decision making regarding strategic directions, investments, policies and approval of corporate IT architectures and standards. This group will be chaired by the CAO, and will include the IS Manager, Commissioners and Manager of Strategic Initiatives.

- **Technology Projects Evaluation Committee (T-PEC):** A management level committee, with staff from business and IT, responsible for assisting the IS Manager and CTGC in the review and evaluation of project proposals. This is currently in place and named the Technology Steering Committee – the committee should be renamed.

- **IS Manager**: Responsible for leading the development of technology strategy and policies, overseeing the operation of the Technology Governance Framework, and acting as an advisor to CTGC regarding most effectively leveraging technology. The IS Manager has management responsibility for the governance supporting work and facilitates IT decision-making by providing insight and transparency to the CTGC and T-PEC into the overall IT environment, processes and resource utilization.

- **Steering Committees**: these groups are convened as required around Enterprise Systems / Processes (Land and Property Processes (e.g. Amanda), Asset and Work Management Processes (TBD), Finance and HR processes (GP), and GIS) and major work programs (such as Information Management). They are responsible for determining strategies, work plans and projects (for proposal forward) within program areas – to ensure that projects and initiatives are complementary and aligned. Strategies developed by these working groups are to be reviewed and approved by CTGC.

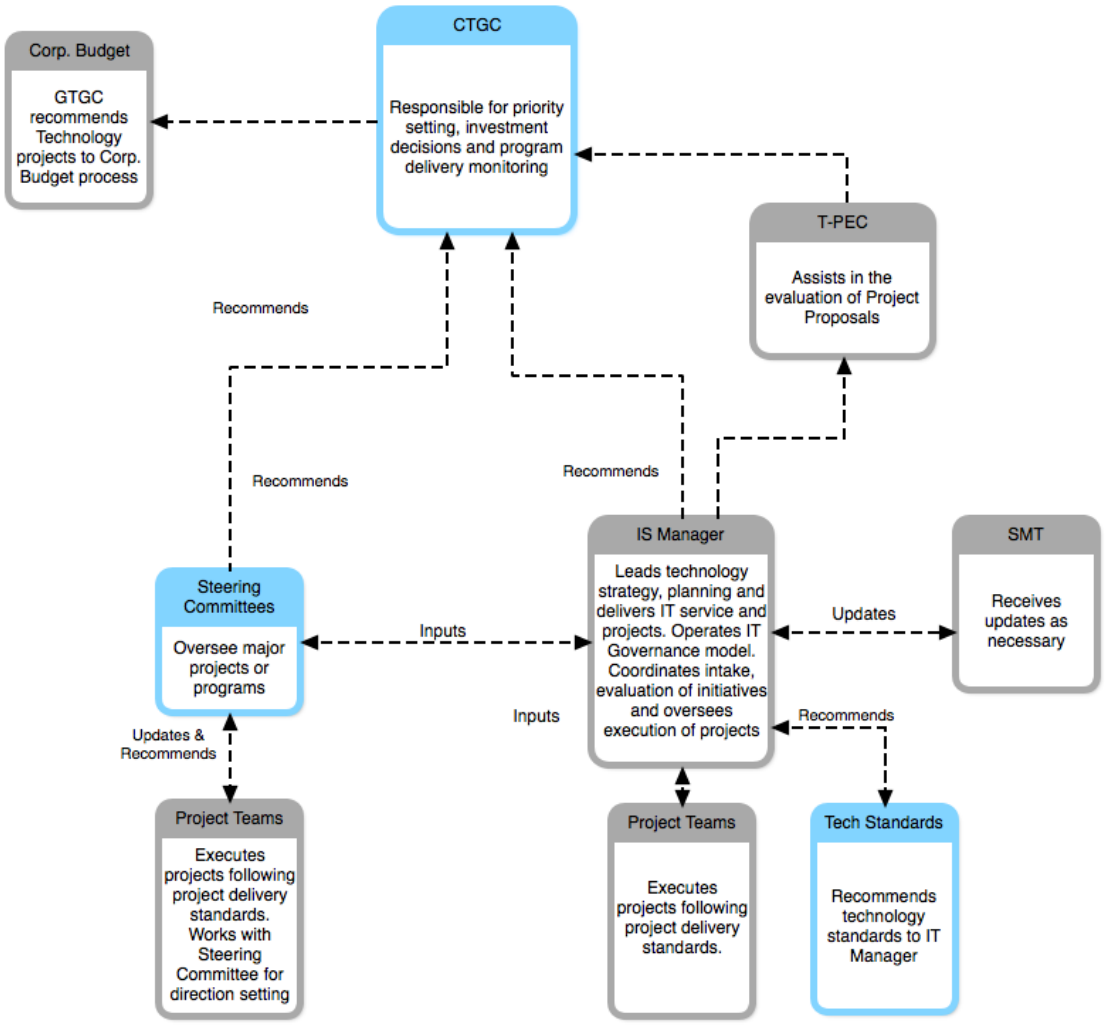
- **Technical Standards Team**: is a “virtual team” of Technology staff responsible for developing, recommending and monitoring compliance with technical, and architectural standards to CTGC. This includes the development of lifecycle/roadmaps for key technologies to ensure that sustainability can be achieved for the Town’s IT environment.

The Technology Governance Framework necessarily interfaces with existing groups and processes. Specifically;

- **Senior Management Team**: Members of CTGC will come from SMT. The IS Manager will attend SMT and can provide updates to SMT regarding technology plans and initiatives as necessary.

- **The Corporate Budgeting Process**: CTGC will review technology-related that have been assessed by the Technology Projects Evaluation Committee (T-PEC) budget submissions (above an agreed threshold), and will approve the IS capital budget, before submitting to the **Corporate Budget Process**. The Corporate Budget Process in turn recommends budget proposals forward to Council for deliberation.

The arrangement of the governance groups is described in the following diagram. Items in blue are new/proposed groups, grey are existing groups.



IT Policies and Standards

IT Policies

Policies and standards should establish the parameters within which the Town uses technology, creating clear expectations for those that use and manage technology.

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 IS alone on behalf of the corporation. For example;

- Which employees get smartphones
- Who is authorized to register a web domain for the Town
- Which websites staff can access, and whether that activity should be tracked
- What content is saved when an employee retires
- How much space does an employee have in email

- In the event of a disaster which systems need to be up and running first
- How secure do we need to be?

For each of these decisions, several factors need to be weighed, including business impacts, employee impacts and importantly, cost impacts. Typically, IS recommendations and policy should flow from IS, through CTGC and to Council as required for approval.

A standard IT policy framework typically addresses the following areas.

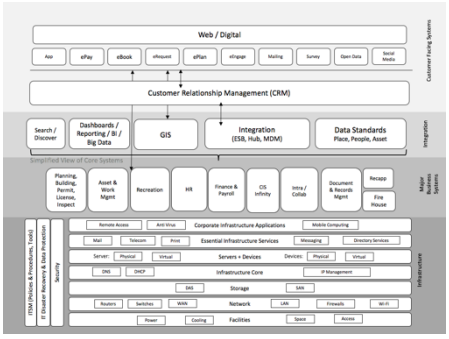
- **Acceptable use**: Provides the parameters, obligations and responsibilities associated with access to and use of Town technology.
- **IT Security**: Defines how the Town operates a secure and reliable technology environment, with adequate controls to protect the Town's information assets.
- **Backup, recovery, BC and DR:** Defines the backup and recovery plans for computer systems that store Town data. This policy is also designed to prevent the loss of Town data and systems in the event of an equipment failure or destruction.
- **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 Town's position with regard to cloud computing and due diligence steps required before procurement of cloud solutions.
- **Data management (lifecycle, privacy):** Ensures that the corporation can effectively manage its data assets, whilst complying with required legislation**.**
- **IT procurement processes:** Defines roles and responsibilities and processes to be followed when procuring technology solutions.
- **Mobile device:** Defines roles and responsibilities and processes to be followed when using mobile devices.

While the Town has some of these policies in place, most require an update. IS Management, with the input of staff, stakeholders and CTGC should review, revise and augment the corporate IS policy framework in the context of this strategy, to ensure that it accurately reflects how the Town wishes to use and manage technology. Policies will be developed with CTGC's involvement, and approval will follow the corporate policy development process. Council is strongly encouraged to support the adoption and enforcement of corporate technology policies.

IT Architecture

IT Architecture is one of the most important standards for the Town.

At a high level the MTA represents the core concepts underpinning the CTSP. The MTA



represents a macro level blueprint, the equivalent of the Official Plan for the technology environment.

Many of the key concepts have already been discussed earlier in this document, however some additional key concepts to bear in mind include:

- Standardization and rationalization – the Town should endeavour to use fewer tools, fully utilizing the solutions it has in place
- The Town should recognize that there are Enterprise and Expert business systems, and that differential levels of support are provided by IS for the different categories of system
    - Enterprise systems: large platforms, core business processes, designed to be reused, fully integrated, functional and technical support fully provided by IS
    - Expert systems: small, workgroup based solutions, designed for single specific uses, not integrated, functional support by departmental teams, with technical 'startup' assistance from IT
- Common corporate security standards must be defined, and oversight from IT provided

Just as the development application process is used to review compliance with the Official Plan and Zoning Bylaws, proposed technology initiatives should be reviewed against the architecture and the Town's IT principles to ensure that the proposal complies with the Town's plans for its technology environment.

As part of the intake process, the IS Division is responsible for reviewing proposals and ensuring that they fit with the Architecture. Where the IS Manager determines that a proposal falls outside the Architecture, the Town's standards or the IT principles, it will be escalated for resolution at CTGC.

Significant revisions to the Architecture will also be brought forward by the IS Manager for approval by CTGC.

IT Standards, Guidelines and Playbooks

In addition to the IT Architecture, the Town should develop guidelines (also known as playbooks) about how to do IT the right way. The playbooks should codify how technology initiatives should be done, allowing for the delegation and empowerment of project teams and staff. It will be the responsibility of the IS Manager and supervisors in the IS Division, with the input of staff in IS and business units to develop these playbooks. There are many good examples from other municipalities that the Town will be able to reuse.

Examples of playbooks and guidelines that other municipalities have developed, and that would be beneficial to the Town include:

- Project management playbook – guidelines about how to approach projects, roles, responsibilities, activities and tasks, templates and resources

- Business process design playbook – guidelines, tools and templates for designing business processes, using customer journey mapping and other customer-centred design techniques.
- Change management playbook – guidelines about how to effectively deploy a change management program in support of a business-technology project, again providing templates and resources for teams
- Cloud playbook – guidelines, processes and steps required to procure a cloud based service

Documentation of IT technical standards and SOP's (Standard Operating Procedures) are important internal documents and tools to help the IS team deliver its mandate and comply with policy directives. Documentation, though currently adequate where it exists, should be improved by the IS Team. The team should determine where the knowledgebase will be managed. At minimum, SOP's for the following areas should be in place:

- Incident management
- Change control process management
- Backup and recovery
- Problem management
- Security management
- Configuration management of critical systems

Processes and Methods

Project Intake / Selection

Before a project can be approved, a set of due diligence activities must be undertaken. Thus, a project moves through multiple stages before it becomes an approved project that is ready to be scheduled and executed.

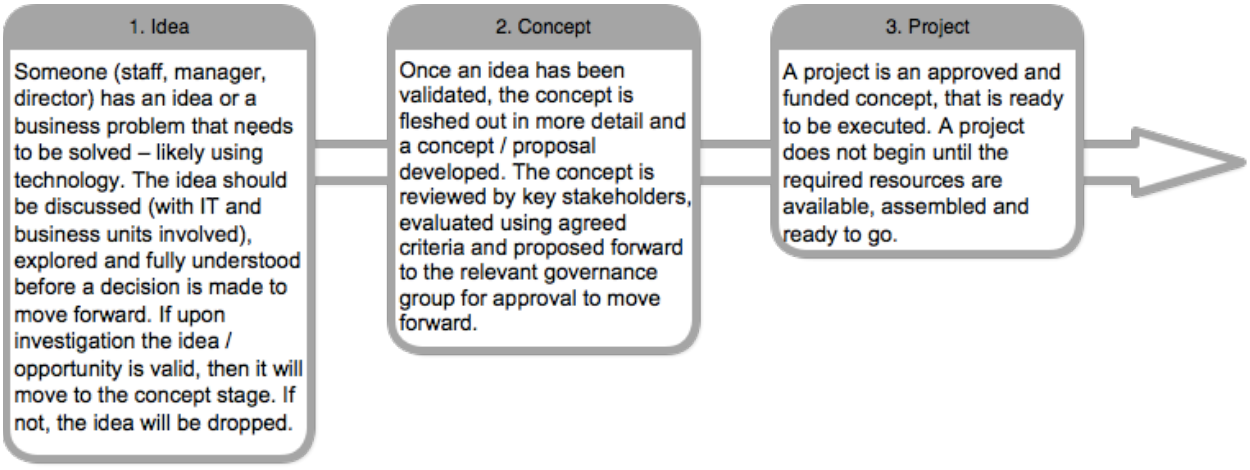


Figure 8: Idea - Concept - Project Process

The IS Manager, with the support of the Business Analyst team will be responsible for maintaining a register of all ideas, concepts alongside the technology project portfolio report shown later.

Idea Development
This part of the process is designed to ensure that project ideas are fully thought through before they become fully funded and committed projects. It is unashamedly designed to slow the idea process down to ensure that ideas can be appropriately explored and developed.

The Concept Development Stage
If the idea is accepted, the team proceeds to the Concept Stage where a more detailed project proposal is developed. Further research about approaches, solutions, resource demands and funding needs are conducted. Once the research is complete and the idea is more completely understood a Project Proposal is prepared. Projects that are deemed to be large projects will require a business case and resourcing plan to be prepared to accompany the Project Proposal Form. If appropriate the relevant Steering Committee should review the Project Proposal.

It is important to note that availability of resources (in the business units and in IT) is the critical issue that has impacted the Town's ability to successfully implement initiatives in the past. It is important therefore to identify and secure the commitment of resources (department and IT staff, contract and secondment and backfill), at the Commissioner level, before a concept can proceed into a project state.

T-PEC will review the Project Proposal and rank according to the agreed ranking scheme.

If at this stage of the evaluation the idea is determined to be a small initiative and funding is available (the concept must be assessed to be both less than $25k of expenditure, and less than 25 total days of work[2]), the idea may be green-lighted to become a project by the IS Manager, without requiring the project approval of the CTGC. CTGC will receive updates on new projects that are approved (by consent) through the IS Portfolio reporting that is brought forward by the IS Manager.

Projects above the defined threshold, or projects that require funding will require approval by CTGC. Project Proposals will be brought forward to the CTGC, with the IS Manager identifying impacts to the Technology Portfolio (e.g. delays to other projects to allow the proposal to proceed).

If funding is required as part of the annual capital project request process, all proposals will be evaluated and ranked by the T-PEC. The IS Manager will also conduct a capacity management review (resource availability and/or needs) and make recommendations to CTGC on the project priorities. CTGC will use this information to support their decision making regarding which Proposals should go forward as part of the IT annual capital budget.

[2] Note these are suggestions, the actual numbers that the Town determines are suitable may be higher or lower.

The Project Stage
Once a proposal has been approved (funded and resourced), a project can be scheduled. Note that approval and funding of a project does not mean that the project will begin immediately. The IS Manager, working with the CTGC and stakeholders will schedule projects to take account of resource availability, dependencies and other factors.

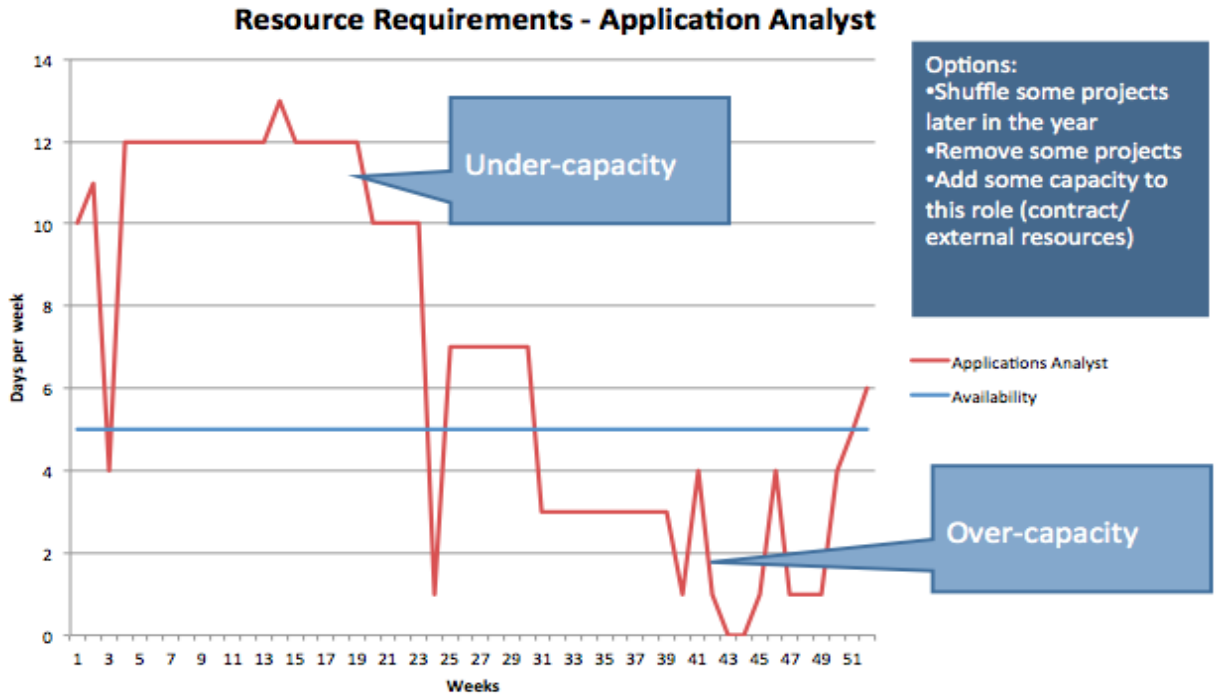
Resource Management

The Town needs to better understand what resources (in IT and business units) it has available, and the project effort required for each proposal so that it can realistically select a number of projects that it knows can be completed.

The progression from the idea to project proposal stage is designed to provide project teams with more time to develop a thorough understanding of the project resource needs, so that the resource needs can be planned for, rather than hoped for.

The IS team will begin to record time on project and operational work. The importance of this data will grow over time. IS Management must ensure that this data is complete and consistent as it will be a key tool in matching resource capacity to the proposed project portfolio.

As part of the annual technology capital budgeting process, the IS Manager will be responsible for collating the proposed IS project resource needs (departmental and IT staff) and matching this to available capacity.



This information will be made available to CTGC and may necessitate changes to the portfolio or additional funding requirements to cover additional short-term contract staffing needs to deliver the portfolio.

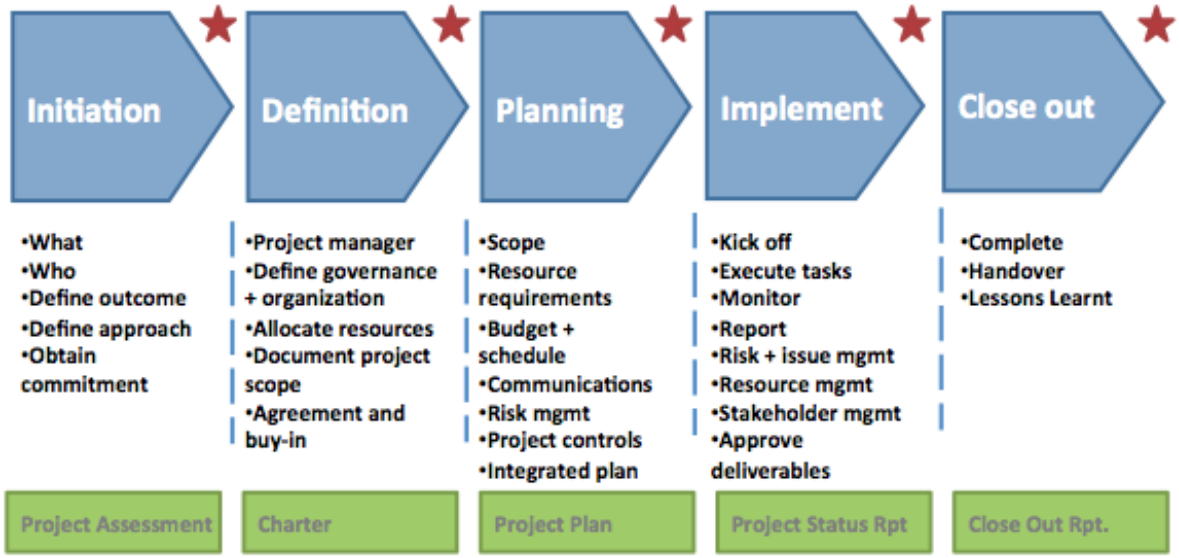
Project Execution

Selecting the right projects and ensuring that these projects have been carefully thought through is an important step in improving the Town's success rate with its IT investments. But, it is only the first step. Once selected, the projects must be executed successfully if the Town is to realize the returns on its investments. A number of factors are critical to project success, including:

- Strong project sponsorship and leadership commitment
- Clear vision
- A strong project manager
- Sufficient resources dedicated to the project – subject matter, business analysis and technical expertise
- Empowered project team that can make decisions / drive change
- A focus on business processes and outcomes, over technology implementation
- Clear change management plan to ensure successful adoption

The final best practice is to apply a proven project management methodology.

The Town should adopt and apply a project management methodology to technology projects. The Project Management Institute (PMI) and PM Body of Knowledge (PMBOK) best practices provide standards that the Town can adopt for its major projects. The methodology should define standard project phases, documentation requirements, and checkpoints at the end of each stage to ensure that project is progressing satisfactorily.



The IS Manager and Business Analysts will play an important role communicating the methodology throughout the organization and assisting IS and departmental staff in

managing projects using the methodology. The IS Manager should also carry out the project checkpoint reviews. This should be carried out as a 'helping hand' not an authoritarian checkpoint process.

For small, digital projects, more agile project management techniques may be applied, and the Town will need to train some of its staff in these approaches.

Measurement & Reporting

Project Portfolio Reporting

The IS Manager is responsible for reporting on the status of all technology portfolio projects (web, digital, GIS, business-technology, technology infrastructure) in a way that provides visibility into the projects and provides IT Management, stakeholders and CTGC with information that can help them intervene if necessary to keep projects on track. A sample portfolio report (heat map) is shown below:

			Project Key Performance Indicators					
Project Name	% Completion	Target Finish	Priority	Overall Status	Budget	Resources	Schedule	Scope
PRM Phase 1	100%	30/06/2018	High		On Track	Sufficient	On Track	On Track
Maximo evolution phase 1	50%	30/12/2017	High		On Track	Sufficient	On Track	On Track
ActiveNet implementation	90%	30/09/2017	Medium		On Track	Sufficient	On Track	Off Track
eScribe Implementation	20%	14/11/2017	High		On Track	Insufficient	At Risk	On Track
Develop a GIS strategy	80%	21/03/2018	High		On Track	Sufficient	On Track	On Track
Primary systems integrations	80%	21/12/2019	Low		On Track	Sufficient	On Track	On Track
Establish Master Data Management strategy	60%	03/03/2018	Low		On Track	Sufficient	On Track	On Track
Develop IT Risk Management Framework	20%	25/05/2018	Medium		On Track	Sufficient	On Track	On Track
POS strategy & systems replacement	10%	30/10/2017	Low		At Risk	Sufficient	On Track	On Track
Future Asset Management systems strategy	10%	30/03/2018	High		Over Budget	Sufficient	On Track	On Track
Primary systems integrations	0%	21/12/2019	Low		On Track	Sufficient	On Track	On Track
Establish Master Data Management strategy	100%	03/03/2018	Low		On Track	Sufficient	On Track	On Track
Develop IT Risk Management Framework	20%	25/05/2018	Medium		On Track	Sufficient	On Track	On Track
POS strategy & systems replacement	10%	30/10/2017	Low		At Risk	Sufficient	On Track	On Track
Future Asset Management systems strategy	10%	30/03/2018	High		Over budget	Sufficient	On Track	On Track
Enterprise Content Management (ECM) Strategy	0%	01/05/2018	High		On Track	Sufficient	On Track	On Track

Figure 9: Sample Project Portfolio Report

As part of the regular review of the IT portfolio CTGC should focus its review upon:

- Prioritization changes
- Review red and yellow status projects
- Projects due for completion
- Projects due for startup
- Any new unplanned proposals

Strategy Success Measures

To monitor the execution of this strategy, a range of success measures / metrics should be tracked and regularly reported to CTGC, and Council:

- Overall IT satisfaction rating (an annual IT survey should be conducted). Current satisfaction rating is below the 80% target, the Town should set 80% satisfaction as an initial target, and then progressively increase the target.

- Tracking the delivery of the initiatives identified in the strategy against the recommended timelines is a key measure that the IS Manager and CTGC should monitor.
- Alongside project reporting discussed above, a key measure for the Town to monitor is the number of business-technology project completions. The goal is to increase the throughput of projects year over year.
- The number of business processes that have been digitized (and BPR processes applied) could be a key measure of progress for the strategy (and the implementation of the major business solution platforms). This will involve identifying an inventory of processes that the Town operates (the Municipal Reference Model is a good source for this), tracking and reporting on the digitization status of each process.
- Given the levels of investment in IS, monitoring the IS investment situation is important, an annual calculation of the total cost of IS per employee is a good measure, that will allow ongoing comparison with other organizations

IT Management Measures and Metrics

In addition, a range of IT Management metrics should also be tracked within IS to ensure that the IS service is functioning effectively. Measures would include:

- Service Requests (volumes, performance against defined targets)
- Change Requests (volumes, performance against defined targets)
- Asset status should be tracked, including
  - Age
  - Status,
  - investment by category
  - Resource use by asset
- IT resources (availability, utilization, allocation)

A combination of this information can be presented in various dashboards depending upon audience.

Annual Reporting to the Organization and Council

Building upon these base metrics, the IS Division can also develop a simple annual report format that quickly and visually communicates to Town staff what has been achieved in the previous year.

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.

The IS Manager should provide an annual report to Council, highlighting cost savings and avoidances, new capabilities, capacities, and new service offerings that have been facilitated by technology.

Figure 10: IT Value Report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