TOWN OF CALEDON

Town of Caledon

Information Technology Standards

Table of Contents

1. General

- Application servers are running Microsoft supported Windows Server operating systems and reside in a single Active Directory Forest supported by multiple domain controllers.
- All corporate servers are housed in 2 central locations in Town Hall and an offsite location. The Data Centre's house both Physical and Virtual Server technologies.
- Remote sites are connected to the Town's internal network through a WAN via dark fiber. Desktop computers are running Windows 10 (with a move to Windows 11 on the roadmap), Office 365 and 2016 and are connected to the network via 1000BaseT
- Network Infrastructure is built using industry standard routers and switches. The Town has also implemented a Storage Area Network (SAN).
- The Town is currently standardized on for file and print services and is currently providing file services using the standard SMB protocol.
- The Town is currently standardized on Windows 10 (with a move to Windows 11 currently underway) Enterprise End User computing devices supporting Microsoft Edge, Google Chrome, and Mozilla Firefox browsers and iOS (iPhone and iPad) Mobile Devices.
- All applications purchased must stipulate that the Town owns the data and that there is a way to migrate or transfer the data out of the application.
- All relevant Help documents must be listed in Wiki.
- Bibliographic information must be stored in the IT Application Catalogue.

2. GIS Standards

ESRI ArcGIS Pro 2.9+ – All corporate GIS data must be created and stored in the Corporate ArcGIS database.

Accuracy

All features will be drawn with positional absolute accuracy or drawn accurately positioned with respect to its true position on the ground as opposed to conceptually drawn.
All feature classes provided will be topologically correct within themselves and free of any overlaps, gaps, slivers, and duplications.
All feature classes provided will be topologically correct with Town of Caledon GIS layers used as a reference including coincidence and shared boundaries (parcels/city boundary etc.).
Curves will be represented as true arcs not segmented lines.

GIS Deliverables

An electronic copy of all GIS information is created in a digital GIS database. Data can be submitted to the Town of Caledon in a compressed format on an external hard drive, USB or FTP site.
The Town of Caledon has standardized their GIS on the ESRI platform, currently leveraging ArcGIS Pro 2.9+. All deliverables will be compatible with this platform and version.
Consultants will provide the Town with progress at appropriate stages during the development of all digital GIS layers for the Town to review and provide feedback and direction.

File Format

All GIS data layers will be provided in a file geodatabase (.gdb).
All final mapping produced will also be provided as a Map Package or Project Package.
Map Package (.mpkx): A map package contains a map document (.mapx) and the data referenced by the layers it contains, packaged into one convenient, portable file.
Project Package (.ppkx): A project package is a file that contains all maps and the data referenced by its layers, as well as folder connections, toolboxes, geoprocessing history, and attachments.
The consultant will work with the Town in the design of the data model for the file geodatabase, using the Town's current official plan schedules data model as a reference and leverage the existing standardized field names.

Coordinate System
The standard coordinate system for the Town of Caledon is Universal Transverse Mercator (UTM) Zone 17
North with the North American Datum 1983-"NAD83 (Original)". All submitted geodatabase layers will use this coordinate system.
Projected Coordinate System: **UTM NAD 1983 Zone 17N (Original)**
Projection: **Transverse Mercator**
Geographic Coordinate System: **GCS North American 1983**
Datum: **North American 1983**
Linear Unit: **Metre**

Metadata
Metadata will be provided with all Project data following the North American ISO 19115:2003 metadata standard style. The metadata will include an abstract, purpose and process steps used to create the data. Attribute field definitions will also be provided. Metadata will be attached to the GIS data through a metadata record and/or as a Readme file. Sample metadata may be provided to the Vendor upon request.

Online Platforms
Latitude Geographics (Geocortex) allows for the creation of corporate or public custom-made, interactive GIS web applications. This software also has extensions for some major software solutions providing key integration. This is the standard for publishing corporate GIS data internally or externally.
ArcGIS Portal is leveraged for internal GIS applications such as dashboards, StoryMaps, Survey123, and web maps. Portal can also be used for sharing layers and other GIS information amongst staff.
For cloud mapping solutions, ArcGIS Online is leveraged.

3. Database Minimum Standard / Backup Standards

Proposed solutions must meet the Towns minimum standards for Database platform.
- SQL Server 2017 is the standard platform for databases.

4. Desktop Software Co-existence Standards

Any required application software shall operate on our Standard Desktop suite of applications without considerable impact or reconfiguration of other software, including existing anti-virus and EDR software (specifics not listed below). This suite consists of the following applications:
- Microsoft Edge
- Microsoft Office 2016
- Microsoft Office 365
- Microsoft Teams
- Microsoft Visio Viewer
- Microsoft Windows 10 Enterprise x 64 (with a move to Windows 11 currently underway)
- Adobe Acrobat Reader DC
- Google Chrome
- Mitel MiCollab Softphone
- Mozilla Firefox
- Oracle Java (x86)
- Laserfiche 7.1.2 (to be retired in 2021) and 10.4
  Other applications which may require integration during the course of the implementation include, but are not limited to the following applications:
- Microsoft Dynamic GP 2018

- Tab Fusion
- BlueBeam Revu
- Kofax PowerPDF
- Kramer VIA Connect app

A complete list of ToC applications is available within the ToC Application Catalogue.

5. Application Server platform - Application

- IIS Web server on Windows servers. Alternative Application Server Platform is Oracle WebLogic Server 11g on Window.
- New applications preferred to be developed on Microsoft .Net Visual Studio 2013 or higher.
- New applications preferred to be run on Windows, 10 and higher, Windows Server 2019 (at least Server 2016)
- New applications preferred to be Browser independent and supported for more than one browser platforms including current versions of, Microsoft Edge, Mozilla Firefox, Google Chrome, Safari, Opera and continuous updates to the application to support for future releases of the browsers. Applications should deliver the same functionalities and user experience across all the supported web browsers.
- New applications preferred to be OS independent.

6. Client Equipment Standards (Desktop\Laptop\Other)

The Town has a four (4) year renewal cycle for computing devices with a minimum specification of Core i5 2.3 GHz with 8GB of RAM and 256 GB SSD.
The current minimum standard for desktop and laptops is as follows;

Energy Star 5.0	Yes
Processor (CPU)	Gen 8:13th Generation Intel® Core™ i5-1345U vPro® Processor (E-cores up to 3.50 GHz P-cores up to 4.70 GHz)
Intel vPro Enabled	Yes
Operating System	Windows 10 Enterprise 64 Bit, currently Windows 10 1809, 1909, 20H2 (currently moving to Windows 11 Pro)
Memory	On Board memory 16 GB LPDDR5-6400MHz (Soldered)
Hard Drive	256GB Solid State Drive (SSD), 2.5" SATA (OPAL)
Graphics (Video Outputs)	Intel HD Graphics 4600 (1024 x 768 16 bit colour)
Warranty	4 Yr NBD Onsite
Keyboard	Wired
Mouse	Wired
Networking	Integrated Intel Gigabit Ethernet
Wi-Fi	Single Band N7260 B/G/N
Bluetooth	Yes

The Town's workstation standard operating system is currently Microsoft Windows 10, Enterprise 64bit (with a move to Windows 11 currently underway). Applications that are compatible with Application Steaming (through Microsoft Remote Desktop Services), web browser or cloud environment are preferred.
The Town's minimum video standards are 1024x768 resolution and general maximum resolution is 1920 x 1080. The Town prefers applications that do not require above 1024 x 768 resolutions without panning off the screen. All Town PCs are equipped with a sound card and speakers.

7. Server Operating System (O/S) Requirement Standards

All new applications implemented shall be certified to operate within the current or recent release (less than 5 years) of, Microsoft Windows Server for both core (file) and application servers.
If an application cannot meet these standards the bidder needs to provide the equipment and a support agreement that covers equipment and security maintenance.
Bidders shall support the operation of the application in a recent version of VMware vSphere ESXi virtual server environment or provide an acceptable alternative.
The application/system should be capable of being installed on Town's infrastructure.

8. Communication / Network Functionality Standards

The Town of Caledon currently uses networking technology based on a hub and spoke architecture. There are 20+ remote sites connecting back to the core using private and public connections.
There is also Wi-Fi at all of the municipal sites.
Access to and from untrusted networks (e.g. Internet, DMZ) is segregated and managed through a firewall. Any access to and from trusted or untrusted networks is provided with security as the top priority and based on documented requirements of the application. Upon request, the vendor of an application should be able to provide network documentation for their application which includes a network diagram, port requirements, traffic flow etc.
Third-party direct access to Town's network is prohibited through any non-approved wireless access points, switches or routers.
Access to vendor's Network Architecture diagram is required.

9. Storage Environments Standards

The Town currently uses a SAN consisting of redundant Fabrics spanning two Data Centers; and. Storage is configured utilizing iSCSI.
The Application vendor should provide estimated capacity requirements for installation and the first year plus growth capacity estimates for the next 5 years.

10. Backup Standards

Applications that require specialized backup tools that cannot be automated and electronically monitored may not be acceptable.
The Town has backup. Data stored on disk; archives are taken off site regularly, depending on retention requirements.
Database backups are performed in a scheduled automated manner using standard database backup methodologies. Standard backup policies are daily backups for servers/applications, and multiple times daily of database transaction logs

11. Application Reporting Tools Standards

SQL Server Reporting Services (***SSRS***) and Microsoft Power Business Intelligence (BI), are the Town's standard reporting tools. YellowFin and Crystal Reports are used for AMANDA. It is preferable that the proposed system provide functionality to define custom reports that can be launched within the application, passing parameters to make the resultant report context sensitive to information currently shown on the screen. Ideally, it should be possible for individual users or user groups to set security levels to access report details.
Flexible report design, data filtering, and search options are to be available within the application.
Bidders should enable efficient user defined report writing capability and data exportability through xml format or comparable standard. Bidders shall state the limitations on what information may or may not be exported through these means.
Microsoft BI Platform is the Town's current standard for delivering reports to end users.

12. **Report Server platform - Application**

Microsoft Power BI Server is the standard and preferred platform for Reports.

13. **Business Intelligence (BI), Reporting and Analytics and Data warehousing**

Currently, the Town's applications support most of the following features and capabilities. Future applications should be supported for the following:

Querying and Reporting capabilities

Town's current applications support flexible and powerful facilities for standardized and user defined queries, reports and quickly build and share analytic dashboards and ad hoc reports.

Data delivery capabilities

Town's applications provide data delivery capabilities to consuming applications, processes and databases in a variety of modes, including: Physical bulk/batch data movement between data repositories such as processes for extraction, transformation and loading (ETL) or extraction, loading and transformation (ETL).

Data Transformation capabilities

Currently, the Town's applications provide built-in capabilities for achieving data transformation operations of varying complexity, including basic transformations, such as data-type conversions, string manipulations and simple calculations.

Data Migrations and Conversions capabilities

Town's applications provide standardized support for migration and transition of other Enterprise Applications.

Data Governance support capabilities (via interoperation with data quality, profiling and mining capabilities)

New applications preferred to be supported and provided a mechanism to work with related capabilities to help the understanding and assurance of data quality over time, including interoperability with: Data profiling tools (profiling and monitoring the conditions of data quality), Data mining tools, Data quality tools, Deployment options and runtime platform capabilities.

Service enablement capabilities

Town's applications provide data integration tools to support service-oriented characteristics and provide support for SOA deployments. Application's data Services to aggregate data from social networks and enterprise data sources to enrich business applications.

Printing capabilities

Town's applications provide the ability to print reports, save reports as PDF, or export to other programs such as Microsoft Excel or Word.

14. **Hosting by External Party**

Hosted solutions should maintain all data in a certified ISO - 27001 data center located within North America (preferably within Canada). All data is to remain property of the Town of Caledon, must be available through both direct and indirect processes (APIs), must be secure, should be available 99.99% of the time, shall have disaster recovery processes in place and shall have fully redundant backup copies including processes to ensure business continuity. By no means should any Town of Caledon data be shared with another party without the expressed written approval of the Town. The Town requires the ability to bring the data back to the Town, in a usable format, with verification that all external copies have been destroyed.

The hosted data center should have physical protection against unauthorized access, tampering, theft or reconfiguration of systems. The Town expects that data centers used by the Cloud Service Provider are certified against a recognized and appropriate industry best practices frameworks and standards that covers physical securities.

Cloud Service Providers shall secure their perimeter through controlled devices on the edge and points throughout their network, Access Control Lists (ACL), firewall rules and other methods should be deployed to safeguard corporate data.

To ensure data is not available to unauthorized parties with physical access to infrastructure, Town data held within the service should be protected regardless of the storage media on which it is held. The Town expects that data at rest will be protected by physical access controls that have been certified against a recognized and appropriate industry best practices frameworks and standards or that protection is achieved through encryption of all physical media.

15. Mobile Application Technology Requirements

Mobile applications should be developed using a responsive design to allow for resizing and reorganization of web data based on the viewing hardware device (PC, laptop, tablet, phone, other). Preference is given to HTML5.CSS/W3.CSS.

16. Business Processes – IT Authority

Integration of technology and related applications and processes whereupon IT is directly responsible include:

- Management of user accounts, AD groups and policies
- Direct management of internally hosted database (SQL) permissions and accounts where administrative modules do not exist within an application
- Absolute control of database administrator accounts of all internally hosted databases
- Server OS software and Hardware installation within the Town's data centre
- 3rd level troubleshooting of applications and related hardware
- Network, connectivity, cabling, firewall, DMZ, and other related configuration
- Upgrades, patching, network tuning and monitoring in accordance with negotiated support agreements
- Rudimentary testing
- Creation of ad hoc interfaces where applicable and appropriate
- Requirements analysis and related processes for major system changes/enhancements

17. Application Integration Preferences

Where integration to an application or system is required and authorized by a vendor:
Integration via Web Services or Web APIs is preferred.
Client-based RPC are standard in the case of thick-client software.
The Town currently uses a centralized solution to distribute software and updates to end users.
Software packages for local client installation need to have either:

a) An .msi installer or
b) Full vendor support for deploying the application's .exe
c) Microsoft Store for Business

Access to all data incorporated with vendor supplied data dictionaries and ERDs would be required at a minimum.

18. Disaster Recovery and High Availability

All New systems need to consider and provide an IT Disaster Recovery (DR) Plan that includes a system architecture diagram with the disaster recovery components and the recovery procedures. As part of the DR plan both the Recovery Time and Recovery Point Objectives need to be stated. The RT and RPO should meet or exceed the requirement if it is specified in the technical requirements of RFP document. The following provides a list of what should be in the DR Plan:
System Architecture diagram with DR components

- Recommended Recovery procedures in the event of a disaster
- Recovery Time Objective: The maximum time required to recover the system
- Recovery Point Objective: The maximum amount of time of lost data

- Recommended backup schedule for, Data, Application software, Application and Server configurations, and static tables/files

All Enterprise and program area critical systems and any system required on a 24/7 basis should consider an architecture that provides a quick recovery in the event of a major outage or disaster. These systems should consider some form of High Availability solution. Potential solutions could include but are not limited to the following:

- High Availability (Clustered automatic failover servers)
- Clustered failover servers at 2 or more sites
- Standby DR servers located in a secondary site
- A Cloud recovery option

19. Security Environment

The Town's current security environment provides a robust security and authentication framework to access the existing environment securely and provide a comprehensive, flexible security infrastructure design to address the security challenges of making all systems available.

- Security devices and/or appliances include Intrusion Prevention Security appliances;
- Various Firewalls and Secure Access Gateway appliances;
- Secure communication encryption via Secure Socket Layer. (SSL) for web-based applications.
- Application Level Security
  The Town's current applications level security provides
  Proper authentication (basic, form based and integrated);
- Authorization and access;
- Administrative Interfaces provides administrator level functions appropriately segregated from user activity, users cannot access or utilize administrator functionality, provide necessary audit and traceability of administrative functionality;
- row-level security;
- Single Sign On (SSO)
  - For internal services, required is LDAP authentication, with a preference for direct SSO using Kerberos;
  - For external services, Azure AD SSO is to be used
- Activity auditing and logging;
- Proper session management

20. Data Level Security

Town's data protection level security provides:

- Data integrity controls;
- Well-developed business rules and validations for data (applications being robust against all forms of input data, whether obtained from the user, infrastructure, external entities or databases);
- Cryptography to protect the confidentiality and integrity of sensitive user data;
- Data access only through backend application services and etc.

21. Email, Calendaring, Scheduling (ECS) Environment

The Town's messaging environment is based on Microsoft Office 365. All solutions implemented that require email delivery must integrate with Office 365.

22. Identity Management (IDM) Environment

The Town's IDM environment is based on Microsoft Active Directory technology utilizing proprietary Microsoft protocols as well as open standard protocols as LDAP or LDAPS. Applications that are hosted internally can connect through LDAP/LDAPS or through KERBEROS. Applications that are to connect remotely (for example cloud, or hosted applications) are to connect through Azure Active Directory pre-integrated, developer integrated,

or application proxy apps (for full details of the options, please see what is included in the Azure AD "Basic" tier).

23. Voice Over IP Environment

The Town's VOIP environment is using a number of virtual Mitel 3300 controllers, using 5330e series sets, Micollab Client Softphone, Mitel MiVoice Border Gateways, Mitel Communications Directors, Mitel MiContact Centers, and Mitel MiCollab systems. All voice traffic is overlaid on the Town of Caledon network. Additionally, there are Polycom Soundstation IP7000 conference phones in a number of conference rooms.

24. Standard/Preferred Application features and capabilities – Helpdesk (user interfacing), Application (backend)

Town's applications include most of the following features and capabilities:

Web enabled features and capabilities

Town's web-based applications support web enabled functions, features and capabilities. New applications need to work collaboratively with other websites and platforms, workflows, document management including versioning and archiving, content management, administration, global search functions, electronic forms, search engine optimizations etc.

High-availability cluster

Most of the Town's applications are clustered. New applications need to support a high-availability cluster environment. Technical requirements include easy way to start, stop, force-stop, and check the status of the application. Applications must have a command line interface or scripts to control the application, support for multiple instances of the application, ability to restart on another node at the last state before failure using the saved state from the shared storage, must not corrupt data if it crashes, or restarts from the saved state. If applicable, the application must be able to use shared storage (NAS/SAN).

Responsive

Most of the Town's applications are web based and responsive and provide an optimal viewing and interaction experience with easy reading and navigation with a minimum of resizing, panning and scrolling across wide range of devices including desktop computer monitors, mobile phones, tablets.

Accessible

Most of the Town's applications are Accessible. New applications need to be accessible for wide range audiences and perform in user friendly manner and must comply with the Accessibility for Ontarians with Disabilities Act (AODA) and its regulations and content with WCAG 2.0 Level AA standards. Capabilities include GUI changes for flexible screen size, increased font sizes, display consistently at various resolutions, support large fonts to improve readability, interface accessibility via standard keyboard access methods and screen reader, compatibility with assistive technologies, Instructions, prompts and outputs written in plain language, and, where possible, supplemented with pictorial information or spoken language, logical tab order for controls, input fields and other objects and etc.

Usability

Town's applications are well designed and developed to be user centric and have a simple and easy to understand interface for users. New applications preferred to be designed to provide ample facilities to assist and navigate or guide the users through the entire application. The application should provide extensive on-line and global help, search facilities for each screen, ability to create personalized content based on individual usage or context, descriptive menus, links and error messages.

Reliability

Future applications must provide information and client resolved statistics of its unavailability or offline ratio due to technical issues and on average, how quickly the technical issues are resolved. The Vendor shall describe the facts in detail with relevant current data.

Scalability for Growth
Future applications must support to Town's growth requirements. The Vendor shall describe the facts in detail with current data related to pricing increases, such as adding new users and or features.

Warranty and Maintenances - Management
Most of the Town's current applications maintenance plans include the following:

- **Installation**
  Vendor must complete first time Installations. Thereafter will be done by authorized Town of Caledon's IT Department. Vendor should provide installation scripts and/or documentation, which shall enable it to be effortlessly installed on both Windows and Linux machines (If applicable).

- **Maintenance**
  Maintenance plan and contract must be available for a fixed annual fee. The contract should include any enhancements or upgrades to the application. Town of Caledon does not provide remote access (VPN) to Town's network without the supervision of an employee in IT department. Remote Desktop software is the preferred method for remote access to resolve any issues.

- **Warranty**
  Vendor shall provide warranty support for an identified period of time from the date of the final accepted version of the system. The vendor shall provide bug fixes of the application along with upgrade releases.

- **Patches and Upgrades**
  Vendor should provide a proper communication channel and support materials to inform newly released versions, patches and upgrades.

Training
Town of Caledon Training plan includes: Vendor must provide the training to designated employees. Training can be done on site, or at the vendor's location. Vendor must provide soft and hard copies of application administration and user guides, course materials in proper format, technical documentations, and database documents etc.

25. Risk Management - Management

- Most of the Town's applications consist of robust risk management and mitigation plans and strategies in case of technology problems that affect availability and performance of the systems.
- New applications must provide a risk management plan in case of technology problems or scheduling delays that affect availability or achievement of performance targets in the proposed timeframe.

26. Quality Assurance and Testing - Application

Post-delivery Testing
Future application vendors must provide the test plans for systems. The application must contain all the functionality of the main system but scaled down to the appropriate configuration. Multiple test systems may be awarded based on the complexity. The Vendor shall propose an Application Regression test plan, and a System Development test plan. Where applicable, tests shall be performed at full scale.

Acceptance Testing

Town of Caledon shall perform onsite acceptance testing on the fully installed system. The Vendor shall provide the sample test plan.

Quality Assurance and Quality Testing will have to be done by Town of Caledon's nominated Quality Assurance role players during assigned time frames. No delivery should be made without proper testing and related test artifacts, test evaluations, summary and test results should be made available with each delivery.

27. Change Management

Information Technology Services has implemented a Change Advisory Board (CAB) to improve communication and awareness regarding the implementation of IT-related changes into production-controlled environments. Vendors should provide proper change management documentation and supporting materials to CAB prior to implementing any changes.

The Change Advisory Board (CAB) is set up to receive, review and approve requested I.T. related changes. They also assist in the assessment and prioritization of changes. The CAB helps ensure that changes are managed in a rational and predictable manner by enforcing standard change management policies and procedures as outlined in the CAB Procedure.

The IT Change Manager is responsible to ensure IT Change Management policies and processes are complied with to minimize the risk that an IT related change negatively impacts the performance, operations or functions of the Town of Caledon.

CAB meetings are held on a monthly basis at least two (2) weeks prior to any scheduled standard changes. CAB members and the Change Manager may invite attendees to all or part of any meeting. Also, each change will have a subject matter expert (SME) representative present at the CAB.

28. Cloud Strategy

The Town has a "Cloud First" policy and will adopt Cloud as much as possible. All technology procurements (new or replacements) should consider using Cloud, the exception is non-Cloud (e.g. on-premise).

The Town utilizes a Cloud assessment tool to assess Cloud applicability based on 10 criteria and provides a score for the deployment model (on-premise, public or private) and the service model (SaaS, IaaS or PaaS).

Preference will be given to SaaS applications with user auto provisioning options.