City of Edmonton Information Technology Standards for Procurements
For Use In All Procurement That Contain Any Information Technology Components

These standards provide general information regarding the services provided by the Information Technology branch, in the context of implementation projects. These standards are published, at minimum, annually through consultation with subject matter experts. Respondents who have questions regarding these standards should engage the contact identified on the Procurement they are engaging in or responding to.

Section A - Standards that Apply to All Procurements

These standards apply, regardless of where the Solution may be hosted.

The Solution(s) should ideally be based upon open systems architecture standards in which the design and technology follow public, non-proprietary standards and specifications allowing for the ability to integrate with multiple hardware and software providers to support compatibility and interoperability with City hardware and software.

1. Project Management

Methodology	To deliver technology projects, the Open City & Technology Branch uses the Technology Project Delivery Framework. The framework lives within the City of Edmonton standardized Project Development & Delivery Model (PDDM); it is also enclosed by, and distinct from, the Corporate Business Technology Investment Framework - which is the overarching investment life-cycle determining governance, funding, and benefits realization. The Technology Project Delivery Framework determines how solutions are delivered. This framework is owned and curated by the Technology Project Management Office, and follows PDDM as well as Project Management Institute (PMI) best-practices. The framework outlines the life-cycle followed by all technology projects, from the hand-off from Technology Planning to closure, and the main stakeholder groups involved in the delivery of technology solutions and their roles & responsibilities.
Project Lifecycle / Gating Process	Within OCT, the Technology PMO strives to match the level of risk for each technology engagement type with a corresponding level of rigor and documentation. The business technology landscape is ever-changing and the framework is continually revised and improved to keep up with the change. To understand the applicable process and deliverables, please refer to the delivery framework overview in conjunction with the responsibility matrix. PMIS Project Online is OCT's Enterprise Project Management (EPM) and Project and Portfolio Management (PPM) solution, used to manage all technology projects (incl. Managed Work Requests) run by OCT for the City of Edmonton. PMIS is the core platform of the Technology PMO, through which we manage and track all information related to our engagements. The solution facilitates Financial Management, Schedule Management, Resource Management, Status Reporting, Portfolio-level reporting, standardization of Workflows, among many other features. Determination of whether a technology initiative should be reported through the PMIS Project Online platform is done during consultations with Technology Investment Governance for new initiatives. Criteria for mandatory inclusion in PMIS: 1. OCT-funded, in whole or partially, through the renewal or growth capital profiles, operating funding, or a combination thereof; or

2. The technology engagement is a Project or Managed Work Request coordinated by an OCT PM.

Criteria for when a technology engagement can be considered for inclusion in PMIS:
1. The prime PM is a City of Edmonton resource (i.e/, internal staff member. or Flextrack/staff augmentation contractor PM);
2. The project sponsor and PM agree to adhere to the PMO framework and constituent rules (i.e., documentation/responsibility matrix, usage of Google folders, keeping PMIS record up to date, biweekly project status reporting, etc.); and
3. The engagement was initiated through the OCT Technology Investment intake process.

Implementation of any information technology to City of Edmonton staff normally should utilize the PMO framework and system for the IT-specific components of the Project, even if the primary purpose of your Project is not Information Technology.

For all technology implementations following Technology PMO rigor, bi-weekly status reports must be submitted through PMIS.

2. Information Security and Risk Management

General	• Solutions must adhere to industry-standard (or better) security frameworks, procedures and technologies. • The level of security controls must be reasonable given the risks and information managed by the application, and must be compatible with existing City of Edmonton security infrastructure. • Installation, support, development and enhancements of solutions must be performed on-site. If this is not possible, remote access will be provided by the City of Edmonton using an existing remote access solution.
Infrastructure	• All City-managed computers (server, desktop, laptop) require a working, properly configured anti-virus software that meets the City's standard anti-virus offerings. • Solutions deployed to personally-owned computing devices should not require Local Administrator privileges to operate. • Local connections to the City of Edmonton network must be done with City-managed devices. Direct connection of devices not managed by the Open City and Technology Branch to the City of Edmonton internal corporate network is not permitted. • Remote access to the City of Edmonton network is limited to use of City of Edmonton approved and managed access solutions. • Use of remote access includes granting the City of Edmonton permission to validate the security of the device being used to connect, including, but not limited to, anti-virus and operating system patch levels. • Access is limited to City-managed devices, where the access level is considered high risk. • Access requires the use of two-factor authentication where privileges or use are considered high risk.
Internal Solutions	• The use of non-standard ports requires explicit City of Edmonton

approval, including the use of compensatory controls to strengthen the level of security.
- Information stored locally on mobile computing devices must be protected by an appropriate data security solution, as determined by the City of Edmonton.
- Encryption of stored data requires City of Edmonton approval and must include key escrow procedures to ensure encryption keys are available when staff are absent.

External Solutions	• Any secure internet site which the City of Edmonton is required to use as part of a solution must be signed with a valid and trusted certificate. • Self-signed certificates are not accepted by the City of Edmonton as either valid or trusted. • Any communication over a publicly accessible network that involves the transmission of City of Edmonton information must be encrypted by an industry accepted encryption protocol. Adequacy is subject to City of Edmonton approval.

3. Enterprise Solutions

ERP Applications	• AEGIS • PeopleSoft HR • POSSE • SAP • SAP Business Objects • Spatial Land Inventory Management (SLIM) System
Spatial Data & Rendering	• ESRI ArcGIS Pro • ESRI ArcGIS Enterprise • Microsoft SQL Server Spatial Database • Safe Software FME • VertiGIS Studio
Drafting	• AutoCAD

4. Desktop Software	The applications detailed here are available on all standard desktop installations at the City of Edmonton. Standard operating system for desktops is Microsoft Windows 10 64 bit.
Software	• Adobe Reader Dc • FlexNet Inventory Agent • SAP GUI • Webpass • VLC Users have access to the Google Workspace which includes • Gmail, Google Calendar • Google Docs, Google Sheets, Google Slides

- Google Meet, Google Chat
- Google Drive

Note: Additional Microsoft Office Professional 2010 applications are available as complimentary productivity tools providing the appropriate business requirements

Web Browsers	● Google Chrome ● Microsoft Edge
Anti-Virus	● Trellix Endpoint Security (HX) Agent (FireEye), anti-virus services are provided to all desktop and laptop installations.
Software Fax	● RightFax, a printer-based FAX service, is available.

5. Email & Calendar

Email & Calendar	● Google Email and Google Calendar are the primary email and calendar service offerings. ● Exchange services are available for application integration use. ● Archival services are provided to all email services. ● Filtering of email, for spam and security purposes, is actively performed.

6. Development Tools

These standards only apply to solutions that the City of Edmonton will be directly supporting in a fashion that requires changes to implementation code.

Application	● .NET ● Java ● PERL
Database	● Business Objects Enterprise XI ● Oracle Discoverer ● Oracle Enterprise Manager ● Oracle Forms ● Oracle JDeveloper ● Oracle Reports ● SQL Navigator ● SQL Plus ● SQL Developer ● TOAD
Version Control	● Team Foundation Server/Team Foundation Services
Web Development	● .NET Technology ● SAP NetWeaver Developer Studio

7. Open Source	The following standards only apply to respondents proposing to include Open Source Technology as part of their proposal.
Product Roadmap	The City of Edmonton encourages vendors to submit roadmaps for open source products as part of an Procurement response to ensure we have an understanding of how the product's features will be changing over the near future.
Product Support	All Procurement responses that are suggesting the use of an open source product must contain elements that detail how adequate support for this product will be provided. Adequacy is determined by the City of Edmonton.

8. Web Application	The following standards only apply to web applications or websites.
Mobile Friendly	- Avoids software that is not common on mobile devices, like Flash - Uses text that is readable without zooming - Sizes content to the screen so users don't have to scroll horizontally or zoom - Places links far enough apart so that the correct one can be easily tapped
Encryption	Protects web application with HTTPS, even if it doesn't handle sensitive communications
Browser	Must support: - Microsoft Edge 117 or higher (Windows) - Google Chrome 118 or higher (Windows, Mac and Linux)

9. Public Facing Web Application	The following standards only apply to web applications or websites that are public facing.
Visual Identity, Colors and Fonts	Must be able to follow CoE Visual Identity Standards and CoE Style Guide and Pattern Library.
Google Analytics	Must be able to embed the Google Analytics to track the visiting traffic details.
Browser	Must support: Any modern standards compliant web browser that is the most current stable channel release: e.g. - Microsoft Edge 117 (Windows) - Google Chrome 118 (Windows, Mac and Linux) - Mozilla Firefox 118 (Windows, Mac and Linux) - Safari 17 (Mac) - JAWS, VoiceOver and other screen readers
Accessibility	Must allow all users (including those with visual impairments or physical disabilities) to access the application according to recognised accessibility standards set down by the World Wide Web Consortium (W3C).

Videos	Videos in the application are provided in HTML5 format, which must be supported by the browsers that are specified above.
Audio Clips	Audio clips in the application are provided in mp3 format.

Section B - Standards that Apply to City Hosted Solutions

These standards apply where the services or servers are to be located at a City of Edmonton datacenter.

1. Computing Facilities

General	The City of Edmonton maintains three primary computing facilities. All solutions that are hosted by the City should be capable of being hosted from one of these three facilities and must conform to IEEE standards.
Rack Sizes	All equipment that is to be hosted at a City of Edmonton computing facility must use a standard 19-inch rack size.

- Rack mounted
- Redundant Power
- Redundant Network
- Redundant SAN fabric connectivity

2. Networks

Internal Network	● Internal wired network connections exist at all city facilities. ● Any product, device, or application requiring network access, or sending/receiving data across the city's network that does not meet CoE Server, operating system, hardware or software standards requires prior approval on a case by case basis.
Remote Access	● Vendor remote access is offered by the City of Edmonton, if required.

3. Data Storage & Backup

Data Storage	● The City of Edmonton maintains a fibre-channel data storage-area network, that is available to all solutions hosted at the City of Edmonton computing facilities. ● Mirroring between data centres is available, if required, to enable higher availability of systems.
Backups	● All corporate information that is hosted on premise is subject to regular backups. ● Backups also include off-site storage as part of the City of Edmonton's Disaster Recovery plans. ● Data that is hosted externally requires a recovery strategy that

	matches the business requirements.

4. Telecommunications

General	• Telecommunications services to the city's 400+ sites are provided through a combination of Centrex digital, analog telephone services and Voice over IP services. • Any telecommunications device or application must utilize existing telecommunications infrastructure. The use of analog telephone services requires approval by the City of Edmonton.
Voicemail	• Voicemail is provided by a combination of City owned systems devices and service contracts with providers.

5. Server

Operating Systems	There are three supported operating systems. All operating systems are available to each class of server (see below).
	• Windows Server
	   ○ 2016 R2
	• UNIX
	   ○ Specific Versioning is available upon request if appropriate
	• Linux
	   ○ Red Hat
	   ○ Centos
	   ○ Ubuntu

• Database Servers	The UNIX operating system is the preferred environment for solutions that require high-availability.
6. Virtualization	The City of Edmonton uses virtualization technology within its server

infrastructure. The use of virtual servers is **strongly** preferred for all Windows solutions. Higher requirements should utilize standalone physical server(s) with preference to blades, then rack mounted..

2 - 8 vCPU   to max of 12 vCPU
8 - 16 gigs RAM to a max of 64 gigs RAM
1 v NIC Network connection
150 GB of storage disk - includes 100 gb required for C: OS (extra charge required for more disk)

Licensing	Software licensing models must indicate what premium, if any, is charged for multicore processor configurations. The license models must also indicate how virtual environments impacts the costs and terms of the license.
Remote Access	No remote access solutions may be installed directly on servers. Only the existing remote access solutions maintained, and approved, by the Information Technology Branch Network Operations Team may be used.
Antivirus	All server installations include anti-virus services.
Domain Environment	The current version of Domain Controllers for Active Directory is Windows Server 2016 R2.
Windows AD Test Environment	A test domain is available which closely simulates the production environment.

7. Database

Enterprise Environments	The City of Edmonton supports two enterprise class database environments: ● Oracle - 12c ● Microsoft SQL Server - 2019 ● The use of other enterprise level database environments must be justified on an exception basis.
Database Development	The City of Edmonton provides limited development support for local and middle tier database applications. Technical support at this level is limited to the provisioning of the database platforms and does not extend to the support of end-user applications developed using these database solutions. Limited "best-effort" application support may be available in certain circumstances.
Database Architecture	The City of Edmonton supports the the sound Database Architecture principles, including the normalization of logical data to physical database

Data Lifecycle	The City of Edmonton requires the ability to manage application lifespan with archive and purge options.

8. Desktop Computing Devices

Operating Systems	There are several supported standard operating system. Not all operating systems are available on all classes of devices. ● Windows 10 64 bit ● Google Chrome OS ● Alternative platforms may be available as exceptions.
Desktop	● Desktop computers run either supported operating system, as appropriate to their hardware.
Laptops	● Laptop computers run either supported operating system, as appropriate to their hardware.
Tablets	● Tablet computing devices are primarily iPad devices.

General

1. Internal Authentication

General	● Active Directory is the authoritative source for all authentications within the City of Edmonton network, including employees and external affiliates.
Single Sign-On	● It is desired that Internally hosted solutions have the capability to integrate with industry standard authentication services such as SAML & OAUTH.
Integration	● It is desired that internally hosted solutions be capable of integrating with Active Directory for the purpose of account provisioning and deprovisioning. ● On-demand integration with Active Directory, such as for authentication, should not be performed except through a City of Edmonton approved authentication source.

Section C - Standards that Apply to Externally Hosted Solutions

These standards apply where the services or servers are to be located at a location managed by a service provider.

2. External Authentication

General	- All external solutions must provide application security, including role-based access control. - Account IDs and passwords must be capable of being at minimum 10 characters each.
Single Sign-On	It is desired that externally hosted solutions have the capability to integrate with authentication services. They should rely on existing standard authentication processes, such as SAML or OAUTH.
Integration	- It is desired that externally hosted solutions be capable of integrating with Active Directory for the purpose of account provisioning and deprovisioning. - On-demand integration with Active Directory, such as for authentication, should not be performed except through a City of Edmonton approved authentication source.

3. IT Disaster Recovery

IT Disaster Recovery Plans	- All Solutions must include a Disaster Recovery plan specific to the requirements of the business. This applies whether the solution is to be hosted by the City of Edmonton or by a third-party - All City of Edmonton solutions are required, as part of the Business Impact Assessment, to define Recovery Point Objectives and Recovery Time Objectives.
Backups	- All data backups must be encrypted. - All data backups must be either stored offsite or replicated to an alternate site.

4. Application Design & Configuration

Design	All applications must include an Entity Relationship Diagram.
Configuration	- The application should allow customization and / or configuration to maintain City of Edmonton communications design guidelines regarding the visual look and feel of the application. - The proponent of the application should describe how the application could be moved to a different platform or functionality transitioned to another application.

5. Integration

Web Services	The preferred method for accessing City data is web-services that use industry-standard protocols and message formats.

	● The functionality of the application should be consumable via web services to enable real-time integration, or as near to real-time as is reasonable.
Data	● The City's data must be available to other City of Edmonton applications including business intelligence and statistical reporting tools. ● Unstructured data should reside in a content repository versus the application's database.