

Enterprise Web Architecture & Modernization Review

Final Report

City of Burlington
November 28, 2022



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Abstract

Abstract

The Enterprise Web Architecture & Modernization Review outlines opportunities and recommendations on modernizing the City of Burlington's current web architecture to:

1. Transform into a customer-centric approach and enhance overall customer experience (CX)
2. Enhance internal operations, service efficiencies and effectiveness
3. Reduce and/or avoid cost through resource utilization and automation

The report compiles the customer-facing applications and technology architecture from CoB's current relevant documentation, preliminary findings and observations gathered during workshops. It also provides an evaluation of the current CRM platform options (i.e., upgrading, augmenting, or replacing the current CRM) to guide CoB in its decision making process. Target state opportunities are presented, along with their associated benefits, improvement metrics, cost impacts and requirements. The report provides a conceptual future state web architecture and a proposed three-year roadmap that shows a high-level implementation plan ordered according to priority and dependencies.

With the current CRM platform options, Option 4 (Delay) is not an option as contracts are pending and technical risks exist that need to be mitigated. Option 1 (Product Upgrade) will likely not achieve the full set of business benefits desired by CoB. Two options remain for CoB to further explore: Upgrade & Re-architect or Replace current CRM platform.

Identified opportunities and potential spending efficiencies are divided along three areas: Centralization of Services, Resource Utilization Optimization, and Digitalization and Service Automation. These opportunities are transformed into actionable activities that are presented in the three-year roadmap.

The last section of this report recommends a dedicated web technology body to prioritize web technology related initiatives. The proposed body named "Web Technology Advisory Body" (WTAB) is associated with mandates and alignment with other departments and teams (e.g., Strategy Risk Team, CX Advisory Team).

Overview

CoB has embarked on a strategic shift to improve its online services and customer experience (CX)

Project Context

The City of Burlington has embarked on a strategic shift to improve its online services and customer experience (CX). There is a need to not only be an effective operations-oriented organization but to transform into a customer-centric organization to improve customer experience.

Key outcomes

1. **Recommendations for improving, upgrading or replacement** of the existing CRM and Microsoft Dynamics implementation
2. **A modern digital platform/architecture** that leverages and enhances core applications which may include but are not limited to ERP, CRM, GIS, asset management, member management and other web driven applications
3. **Provide supporting data for ongoing** funding for subsequent phases that would address the remaining detailed requirements
4. **High-level work packages** that would address the remaining detailed requirements in the roadmap

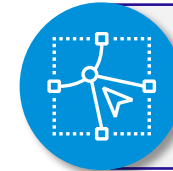
In addition, CoB is currently enhancing its digital services with a number of strategic initiatives



LMDPR



SDAF



Website
Modernization

CoB is implementing additional solutions to enhance and meet its business strategic objectives:

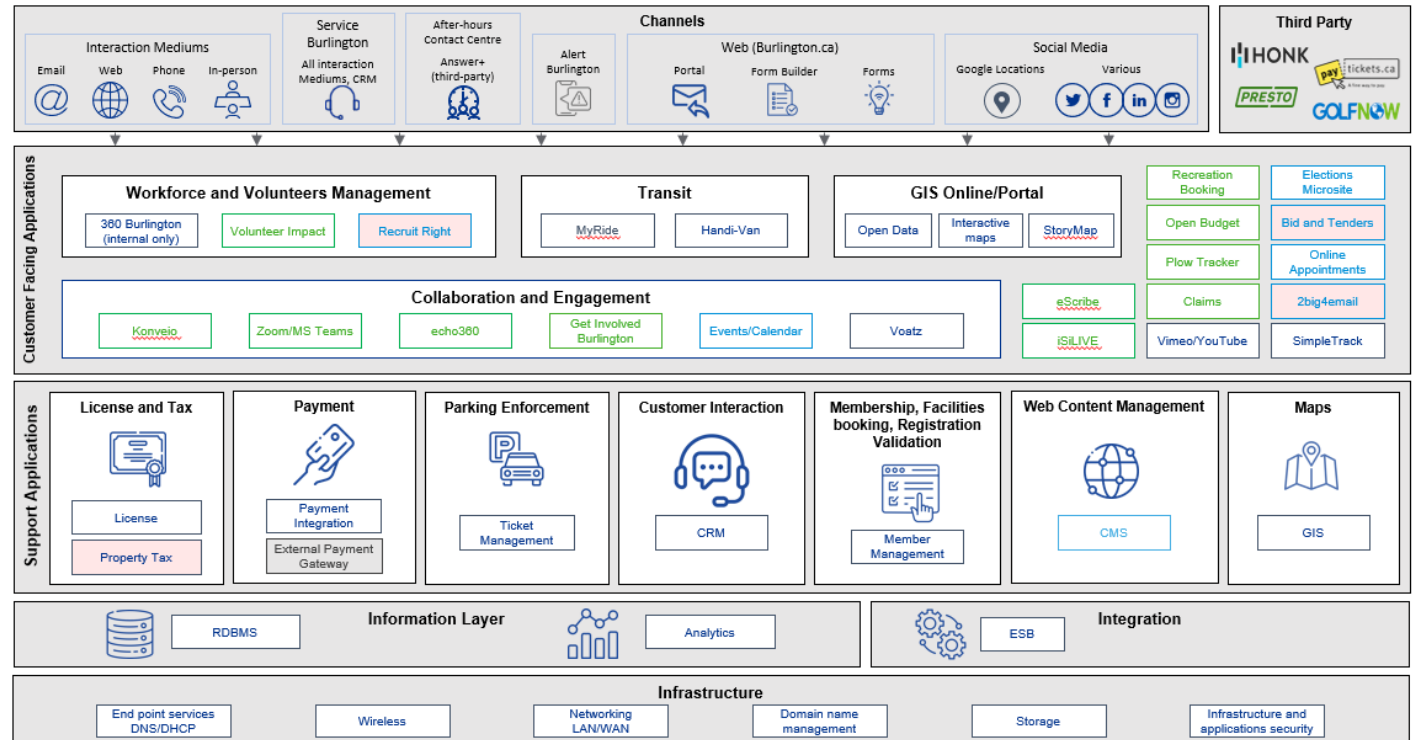
1. ERP
2. Property Tax
3. Enterprise Asset Management

Current state assessment

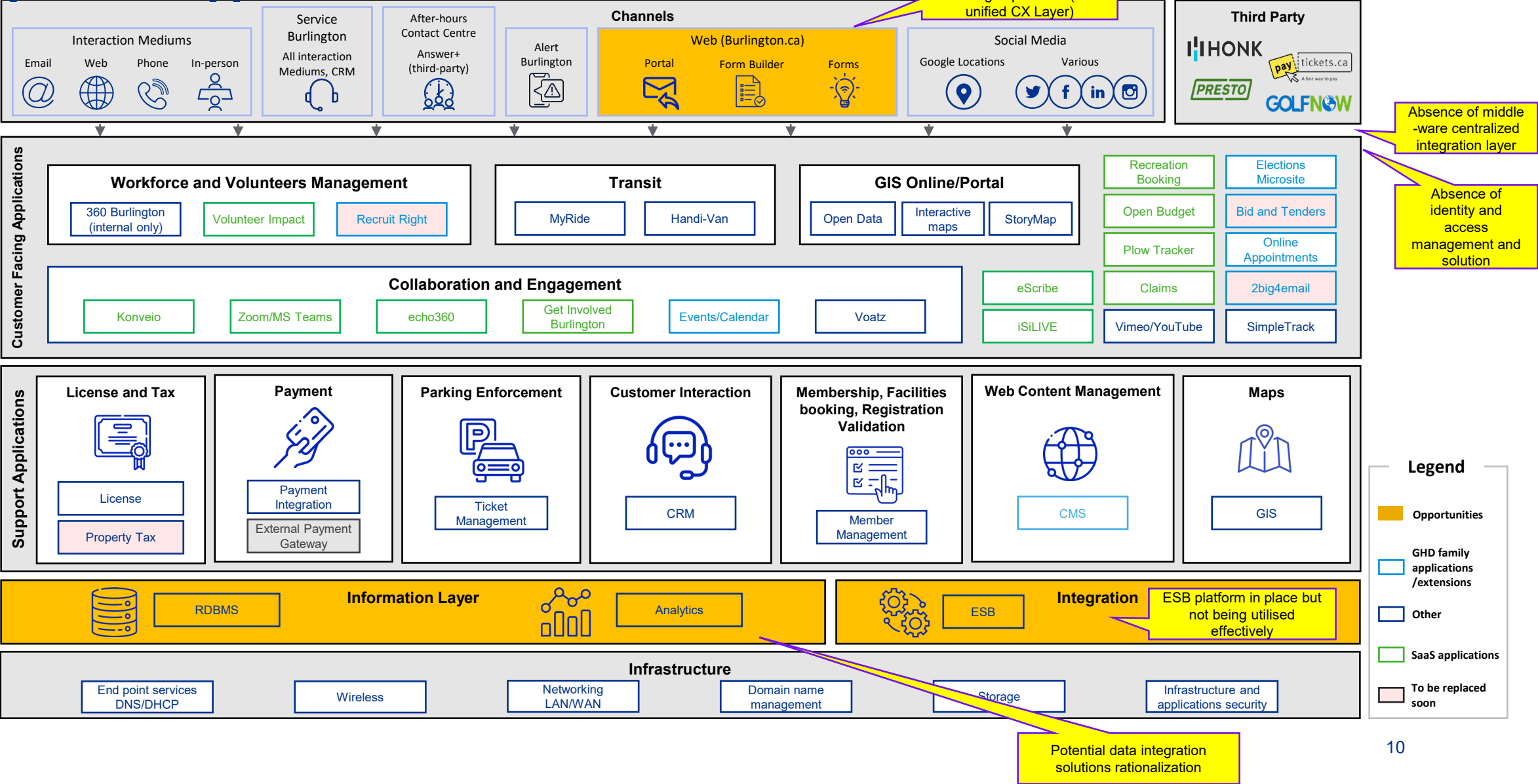
Consolidated view of CoB's Customer Facing Technology Landscape

It is clear that CoB has some of the leading municipal solutions and applications that have been deployed without adequate consideration for Enterprise Architecture Principles and Guideline. This has created challenges such as

1. Proliferation of technology stacks which increases the complexity of the applications platform and drives higher maintenance and support costs
2. Complex customized applications (i.e., CRM) which can restrict the ability of CoB to take advantage of seamless customer experience capabilities
3. Unintegrated applications (cloud and on-prem) which further restricts the full potential uses of the applications in a unified manner
4. A lack of a cohesive application and data enterprise architecture which over time will amplify the above challenges



In our analysis of CoB's current state architecture, we have highlighted potential opportunities



We have summarized relevant key observations (1/4)

Findings

01

Centralized Customer Identity

- The lack of a CIAM framework and supporting tools prevents CoB's customers from authenticating with a single identity across channels, resulting in an inconsistent user experience for customers.

02

CRM Platform Limitation

- The current CRM application is built on top of Microsoft Dynamics 365 v8.2. The proprietary application can be challenging to customize and/or extend, and may require paying the vendor for changes due to associated degree of complexity.

03

Customer systems sprawl and disjointed customer facing applications

- The lack of proper SaaS application portfolio management may lead to disconnected customer channels and make it difficult to deliver omnichannel digital experience. Isolated portals and disjointed applications may also lead to challenges in delivering connected and consistent customer experience.

We have summarized relevant key observations (2/4)

Findings

04

Lack of centralized customer interactions

- Customers can contact the city through multiple channels, however, not all departments are currently enrolled to the CRM to manage inbound requests. This results in delayed responses and additional work effort to complete requests.

05

Limited visibility

- Limited visibility into process status (e.g., customer and staff perspectives) leads to more inbound customer inquiries asking for service status updates. City staff without access to certain systems (due to lack of system integrations or insufficient information) are forced to transfer customer calls to multiple departments, resulting in more process delays.

06

Lack of system architecture integration guidelines and principles

- Lack of system integration guidelines and principles may lead to an inconsistent integration pattern among CoB's various systems. This results in increased complexity and management difficulties from cost and information security perspectives.

We have summarized relevant key observations (3/4)

Findings

07 | Underutilization of integration capabilities

- Although CoB deployed several integration solutions and capabilities, it has been noted that these solutions are not utilized fully, nor deployed in a centralized manner to facilitate and manage all internal and external integration points among CoB's main applications. Moreover, several critical applications are integrated via point-to-point integration associated with non-standardized integration pattern (e.g., EAI, web services, DLL). This may lead to increasing difficulties in establishing, managing, and monitoring integration points and services as point-to-point integrations increase.

08 | Lack of single customer data repository

- Customer data is not stored under a single repository due to absence of data sharing technologies and strategies (e.g., Master Data Management (MDM), data lakes, etc.), creating issues when CoB needs updated records to handle customer matters or internal requests.

09 | Operational prioritization

- While IT and other teams have the capacity to support CRM and CX upgrade initiatives, this is at the likely expense of other work. CoB must balance competing resourcing priorities and factor in additional operational support capacity that may be required to build and support the transformed solutions.

We have summarized relevant key observations (4/4)

Strengths

10

Lean IT projects staffing approach

- IT staff are dedicated to delivering high-quality project results to meet CoB's needs. The IT team also addresses resource limitations in major projects (e.g., ERP project) by hiring third-party consultants and coordinating relevant business department employees to deliver the project on time and to meet business goals.

11

CoB has strong capabilities to drive customer centric goals from investments in digital solutions

- CoB's investment in digital solutions provide a strategic foundation for digitally enabled technology architecture. These low-code/no-code platforms have many potential add-on apps and enable automated services.

12

Knowledgeable staff

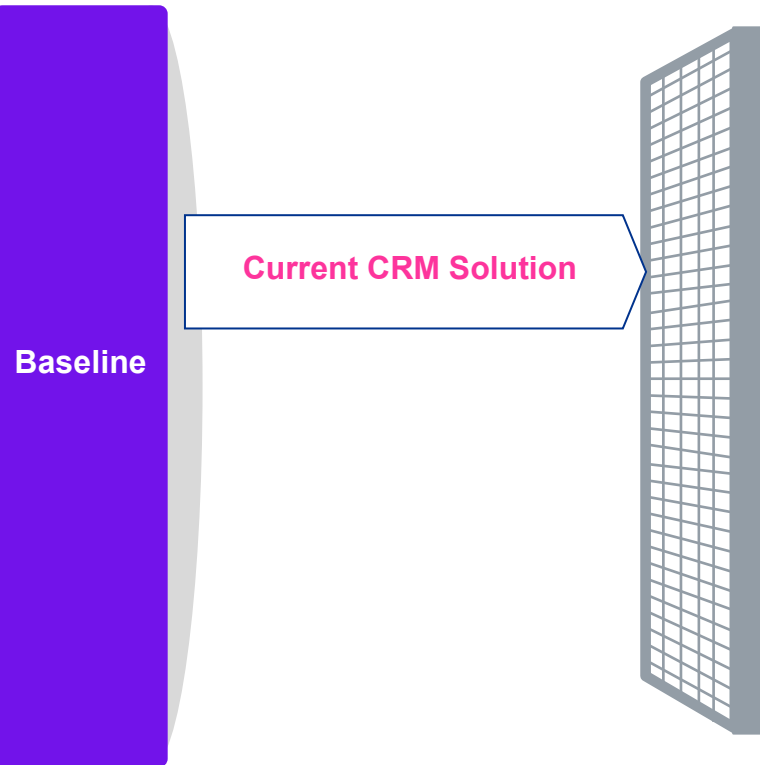
- The city staff are knowledgeable and have a vision for improvements the City of Burlington can make to leverage digital technology to strengthen the city's overall services.

CRM Evaluations

CRM Platform Recommendations Approach (for future CRM review)

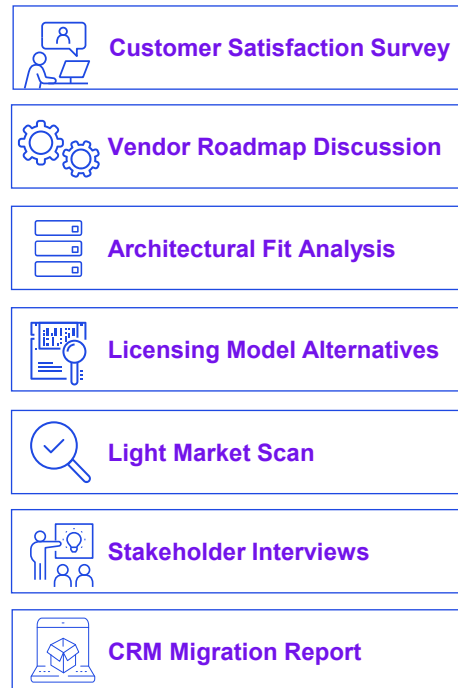
Step 1 – Initial Scan

Understood current core features, hosting, integration capabilities and pain points



Step 2 – CRM Analysis

Performed several activities to inform our analysis



Possible Alternatives



Upgrade the existing platform:

- CRM Hosting Model
- MS D365 PaaS Online Model



Replace existing platform



Rearchitect solution

CRM current situation

Not all CoB departments are onboarded on the current CRM solution.* These are the departments currently leveraging the CRM:



Service Burlington



Office of the City Clerk



Transportation



Transit



RPF



Building & By-law**

***currently engaged for CRM implementation*



CoB has a diverse range of customer-facing applications. Complexity is introduced by the specific needs of each business function and the need for collaboration with customers.

**CRM onboarding is not expected to be completed in 4 years time*

COB needs to make a quick decision on the current CRM solution due to several factors



Currently, there is no visibility into the roadmap of the currently implemented (at CoB) CRM product.



Current CRM features cannot be enhanced or customized easily. Therefore, the existing CRM platform will not accommodate CoB's strategic and future evolutions of its business.



There are documented gaps and concerns in CRM functionality, CX and flexibility.

CRM should be managed differently based on its capabilities to leverage its potential features

1. CRM should be the central system overseeing and/or having visibility to customer service interactions and history. (i.e. Service Request/Case Management)
2. CRM should act as the first point interface for users within contact centers to provide a consistent experience and to allow for service process initiation and tracking
3. CRM access is not required for all staff – but primarily for those focused on customer service roles. It can be a launching point into other applications when initiated by customer service requests.
4. CRM should be able to call/initiate downstream applications and services (e.g., workflow engines) while presenting a single view of client activity and interactions as well as running processes
5. CRM is and should be seen as the master for customer contacts profiles and interaction data. It should be a source for other applications and should be a repository for other applications to feed interaction events to.
6. CRM should be capable of interoperating with other applications that provide customer service capabilities seamlessly.

**The CRM should not to be expected to perform all customer serving functions.*

Therefore, CoB has several options to proceed with the current CRM as follows

01

Product Upgrade

Upgrade the current CRM platform from v8.2 to v9, along with the web component

Two hosting options are possible:

- a) CRM Hosting Model
- b) D365 Online PaaS Model

02

Upgrade & Re-architect

Upgrade the current CRM platform from v8 to v9.2 D365 Online PaaS Model, and decouple CRM components (*e.g., decoupling web CX layer by using front-facing products*) to align with architectural and functional needs.

Any combination of several re-architecture options can be adopted.

03

Replace

Replace the current CRM, and move to a new CRM solution:

- a) Municipal-focused CRM product
- b) Generic platform product (*e.g., Salesforce, D365, ServiceNow, etc.*)

04

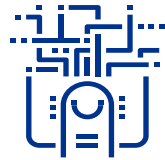
Delay the Decision

Continue using the current Dynamics v8.2 CRM platform – which Microsoft will stop supporting on Jan 13, 2026

Option #1: Product upgrade variations



The first option is for CoB to upgrade their CRM product and web components. There are two main scenarios for CoB to consider that outline the several potential hosting models to accompany these upgrades.



The current version of CRM can be upgraded and one of the hosting options can be chosen

1

Upgrade and Host

Upgrade CRM product and web component

2

Upgrade and move to D365 Online Model to Microsoft PaaS hosting

Upgrade CRM, web component and hosting model to PaaS.



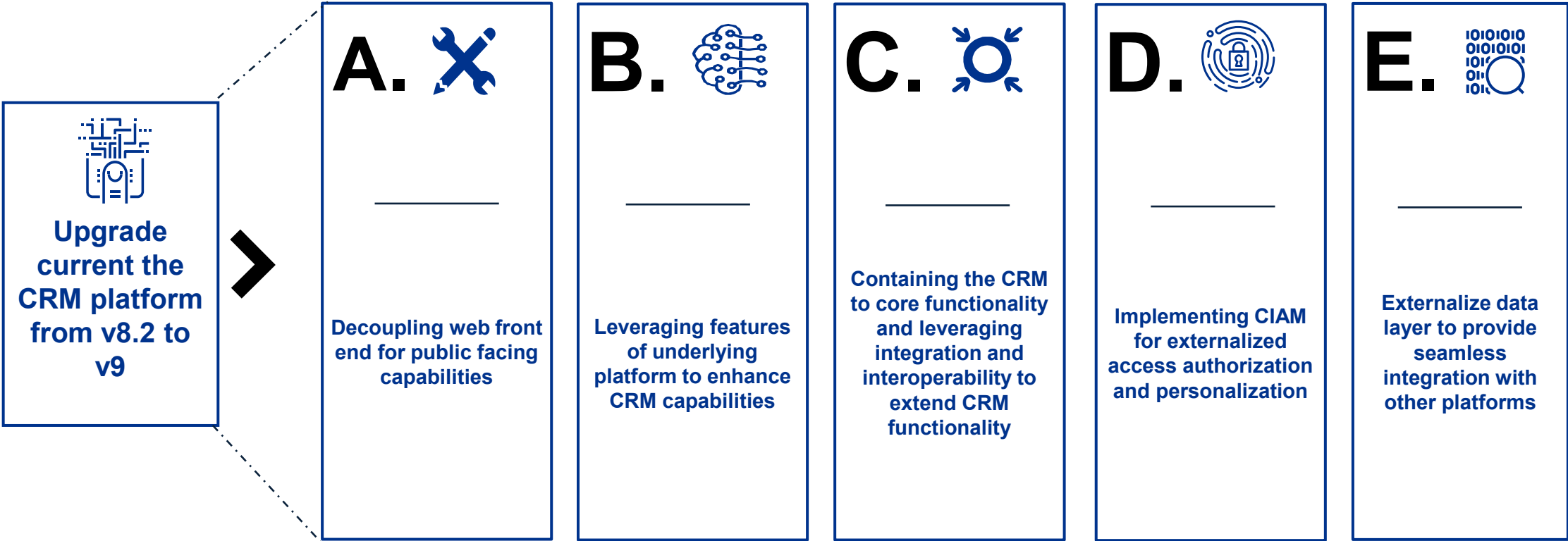
2.1

Upgrade and use 3rd party or CoB Azure private cloud hosting model.

Option 2 : Several architectural scenarios



In the upgrade re-architecture option, the main objective is to upgrade the current CRM platform from v8 to v9.2 (D365 online PaaS Model) and contain the current CRM platform by decoupling application components (e.g., web component) considering rearchitecting one or more of the below scenarios:



Option 3 - Replace Current CRM (i.e. Reset)



The third option is to replace the CRM through a new procurement process. This option is best when it takes too much effort to align systems to business and technical needs via re-architecting, concerns exist with current vendor costs or relationships, or CoB plans to adhere to long-term principles that are better enabled with a clean slate of systems

Two Scenarios

Validate Requirements

Market Examples

1

Municipal/
Government
focused CRM

Examples

Functional

- Customer relationship history, service desk, routing, flexible new workflow creation
- Adaptable workflows, accessible KBA format, form & data layer integrations

Non-functional

- Extensive support, easy integration maintenance
- Easily configurable, new feature implementation, extensive support, app marketplace access

Accela*

ENDEAVOUR for CRM*

Creatio

VeloCITY365*

1R ROCK SOLID*

Microsoft Dynamics 365

HubSpot

salesforce

servicenow

ORACLE

Switching sooner will minimize switching costs [cut the pain]

*Government-focused CRM platforms

Recommendation Considerations



Staying the course (Option 4) is not an option as contracts are coming up and there are technical risks that need to be mitigated.



Option 1 (Product Upgrade Variations) will likely not achieve the full set of business benefits desired by CoB.



Opportunities

The key aims



Cost effectiveness and efficiencies



Cost Avoidance



Cost Reduction

Enhanced Customer Experience



Improved customer service



Enhanced customer draw and engagement

Areas of opportunities and spending efficiencies

Centralization of Services offered by CoB



Opportunities

- Promote customer self-service Capabilities
- Service Burlington to obtain end-to-end visibility

Resources Utilization Optimization



Opportunities

- Cross applications processes workflow integration
- Enhance data reporting and analytics: Sentiment analysis

Digitalization and Service Automation



Opportunities

- Unify CX layer (Forms)
- Streamlined customer identity and authorization
- Master data management strategy and governance
- Integration Middleware Layer
- Agile responsive technologies that improve time to market

Opportunities (1/5)

#	Opportunities	Challenge	Opportunity Description	Benefit	Improvement Metrics	Cost Impact	Requirements
1	Unify CX layer (Forms)	Currently, there are several forms building capabilities to deliver certain services to CoB's customers which has created additional complexity to integrate CX channels with front-facing applications. This creates a redundancy in skills and applications which reduces efficiencies and limits optimal seamless CX delivery.	Unify CX layer by eliminating and selecting the most robust solution to provide the seamless CX layer and connect it with major front-facing applications (e.g., CRM, ticket management, etc.)	<ul style="list-style-type: none"> Enhanced CX Better data integrity Improved and streamlined form development lifecycle More focused skills development 	<ul style="list-style-type: none"> Reduction on number of form building capabilities or solutions (application rationalization) leading to yearly saving on form building solutions licenses and subscriptions Number and percentage of forms on consolidated platform 	<ul style="list-style-type: none"> Cost reduction 	<ul style="list-style-type: none"> Not applicable
2	Integration Middleware Layer	Currently, several applications are connected via point-point integration. In addition, there is an ESB solution but it is not fully utilized. It was also noted that not all applications are using a standardized integration method or pattern. For instance, an application is connected to an integrated payment gateway through a DLL and EDI interface pattern.	Centralize and unify integration layer by utilizing the existing ESB to a greater degree or acquiring an integration middleware solution.	<ul style="list-style-type: none"> Enhanced CX Better data integrity Reduced integration development Lifecycle 	<ul style="list-style-type: none"> Reduction on time and effort to develop and maintain integration points Utilization of reusable services and integration points 	<ul style="list-style-type: none"> Cost reduction 	<ul style="list-style-type: none"> Investment in middleware layer

Opportunities (2/5)

#	Opportunities	Challenge	Opportunity Description	Benefit	Improvement Metrics	Cost Impact	Requirements
3	Cross applications processes workflow integration	Automated or system-driven process workflow integration is not currently available among CoB's applications. As a result, manual and repetitive tasks are increased, which will increase the turn-around time for a service to be fulfilled. Furthermore, business users will have multiple access systems, rather than a single system tailored to their roles.	<p>Workflow integration to enable routing and task automation, the workflow can streamline the tasks resulting in better utilization of resources and improve turnaround time.</p> <p>An automated system would also reduce errors by automatically passing data captured between systems with reduced human intervention.</p>	<ul style="list-style-type: none"> Avoid the overhead of needing to learn multiple systems and to allow focus on completing specialized customer service activities Better SLA Definition & Tracking 	<ul style="list-style-type: none"> Services optimization and reduction on repeated tasks and services cost by 30%* Redirecting FTEs into more value added or strategic tasks No additional licenses required to access certain applications (e.g., CRM) 	<ul style="list-style-type: none"> Cost reduction Cost avoidance 	<ul style="list-style-type: none"> Investment in workflow integration solution Process reengineering
4	Service Burlington to obtain end-to-end visibility	<p>The Service Burlington (SB) team members are currently unable to seamlessly track customer requests from other non-onboarded departments or services provided through applications other than CRM. When access is provided to other applications it often means switching between applications to get the status of customer requests.</p> <p>This lack of end-to-end seamless visibility for Service Burlington (SB) employees leads to the increased need for internal clarifications calls and communications, which takes up valuable time that can otherwise be spent on operational tasks</p>	With proper integration, event distribution and messaging between CoB applications, SB team will be able to view relevant customers transactions information that can be helpful to better service the client	<ul style="list-style-type: none"> Improved collaboration Better end-to-end customer interaction and historical visibility Less time spent on internal status updates 	<ul style="list-style-type: none"> Customer query response time improvement Customer interaction history and analytics response time improvements 	<ul style="list-style-type: none"> Cost efficiency 	<ul style="list-style-type: none"> Investment In integration and event management tools

Opportunities (3/5)

#	Opportunities	Challenge	Opportunity Description	Benefit	Improvement Metrics	Cost Impact	Requirements
5	Promote customer self-service Capabilities	<p>CoB's customers do not have a single interface to raise requests or share feedback through a unified channel. Customers can interact with CoB through various channels (e.g., service request form, customer web portal, Get Involved Burlington, complaint form, etc.).</p> <p>As a result, there exists an inconsistent and unstructured process to submit and obtain status and other information from various CoB involved department. Overall, this results in a poor customer experience and unnecessary, often wasteful back-office communication</p>	Create a unified customer-facing capability allowing customers to dynamically raise requests, track the progress of requests and easily interact with customer representatives or efficiently find self-serve knowledge. This can be achieved by adopting a unified portal (digital portal) and/or by allowing customers to directly access the current CRM application. This can also be supported by leveraging other existing customer-facing capabilities (i.e., SmartGuide)	<ul style="list-style-type: none"> • Cost savings from reduction in unneeded full service interactions. • Enhanced CX • Provide more process visibility to customers • Meets modern demands from customers expecting increasing self-service capabilities. 	<ul style="list-style-type: none"> • Reduction in FTE utilization for assisted and full-service interactions. • Opportunity to reduce contract pricing of Answer+ by reducing the number of misdirected requests 	<ul style="list-style-type: none"> • Cost efficiency 	<ul style="list-style-type: none"> • Investment in workflow integration solution • Process reengineering
6	Streamlined customer identity and authorization	<p>Currently, there is no centralized customer identity platform to authenticate and authorize customers, manage customer details, provide preferences and credential information. Accordingly, customers require multiple identities and associated logins across services. This creates a poor customer experience but also costs CoB the opportunity for an accurate, 360-degree view of the customer across interactions channels</p>	Implement Customer Identity and Access Management platform to allow customers to interact with CoB services seamlessly. Augment the credentials management with customer profiles and preferences to better understand and predict service needs.	<ul style="list-style-type: none"> • Enhanced CX • 360 customer view • Personalized customer journey • Self-service account management 	<ul style="list-style-type: none"> • Reduction in effort on customer profile creation and management • Reduction in effort to manage accounts and related security 	<ul style="list-style-type: none"> • Cost reduction 	<ul style="list-style-type: none"> • Investment in CIAM solution

Opportunities (4/5)

#	Opportunities	Challenge	Opportunity Description	Benefit	Improvement Metrics	Cost Impact	Requirements
7	Master data management strategy and governance	Master data management strategy and governance should be in place to set data quality priorities and ensure data integrity. Overall, master data management strategy and governance are essential components to ensure proper data management-related decisions and ensure data is effectively leveraged as a corporate asset	<p>Establish master data management strategy and governance practice to:</p> <ul style="list-style-type: none"> • Perform an ongoing inventory of data assets • Identify key players (e.g., applications owners, data owners, data stewards etc.) • Make decisions quickly or hold consultation without overlooking important key stakeholders • Define data quality requirements and assign responsibilities 	<ul style="list-style-type: none"> • Effective and efficient management of data assets • Ability to better leverage the value in the data • Better alignment with CoB's strategic data visions • Enforce consistent data management and integrity 	<ul style="list-style-type: none"> • Increased data quality and reduced data errors • Better currency of data • Reduction of multiple versions of truth 	<ul style="list-style-type: none"> • Not applicable 	<ul style="list-style-type: none"> • Master data management strategy and governance program
8	Enhance data reporting and analytics: Sentiment analysis	Currently, CoB has started the journey of advanced business analytical reporting but there is still opportunity to better enhance the customer experience by fully unlocking insights by improving customer experience related data. Existing BI tools could be better utilized to act as a central customer intelligence hub. An example is the sentiment analysis feature which can provide an insight into potential problems and could lead to better customer experiences and understanding.	Further utilize the existing BI tools to establish sentiment analysis processes. These processes are performed on data to determine brand and product sentiment (positive, negative, neutral) and understand customer needs.	<ul style="list-style-type: none"> • 360 customer view • Dashboards can provide visual views of decision-making information in a centralized hub. 	<ul style="list-style-type: none"> • Availability of quality decision-making data across multiple facets • Rapidity of data-driven decisions. • Satisfaction with dashboard views. 	<ul style="list-style-type: none"> • Not applicable 	<ul style="list-style-type: none"> • Expand usage of existing tools

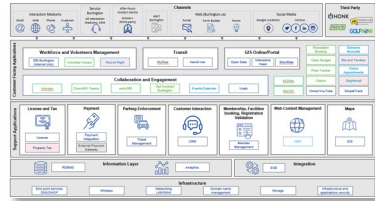
Opportunities (5/5)

#	Opportunities	Challenge	Opportunity Description	Benefit	Improvement Metrics	Cost Impact	Requirements
9	Agile responsive technologies that improve time to market	Current application technologies are customized and built on platforms that have less flexibility and require extra effort to respond to business requests for changes	Procure new technologies and/or newer versions of existing technologies that provide faster delivery of features and products that align with business requirements and reflect improved time-to-market needs coming from business	<ul style="list-style-type: none"> • Ability to more quickly respond to customer needs and suggestions • Ability of CoB to more rapidly implement improvements, processes and service offerings 	<ul style="list-style-type: none"> • Time required to implement new features 	<ul style="list-style-type: none"> • Cost efficiency 	<ul style="list-style-type: none"> • Responsive/agile implementation processes • Responsive technology architecture strategy • Rapid application development (e.g., low-code/no-code platforms)

Future State Architecture

We utilized a comprehensive approach to design future state architecture

Current State Architecture



Current Finding & Challenges

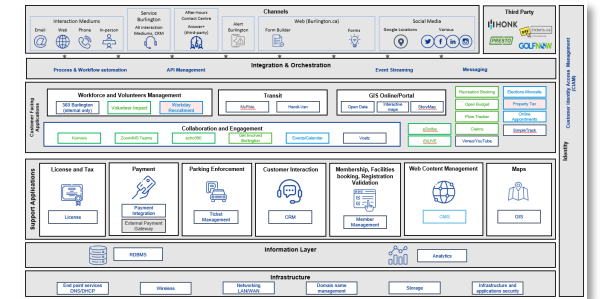
Guiding Principles

CoB's CX Strategy

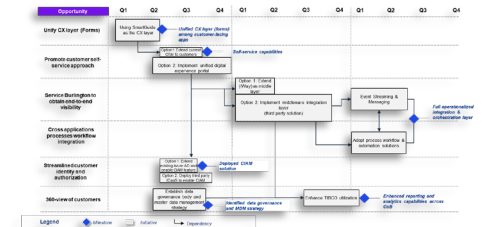
Opportunities for Improvements



Future State Architecture



Architecture Roadmap



Architecture themes

CoB's CX Principles (The 5 Es)



Architecture Themes



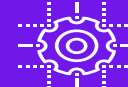
Strategy Oriented



Service Oriented



Data Driven



Sustainable



Simplified



Standard Based



Modern

Architecture principles (1/2)

1. Design a consistent user experience across multiple channels
2. Use no-code / low-code or configurable tools to enable flexibility, avoiding customization wherever possible
3. Design applications to be highly granular and loosely coupled that can easily be reused by other applications.
4. Applications should be designed with the ability to extend functionality and scale according to the business needs
5. Avoid point-to-point integration by leveraging common integration services
6. Life span of solutions components must factor in decisions (e.g., future proofing, modernization, etc.)

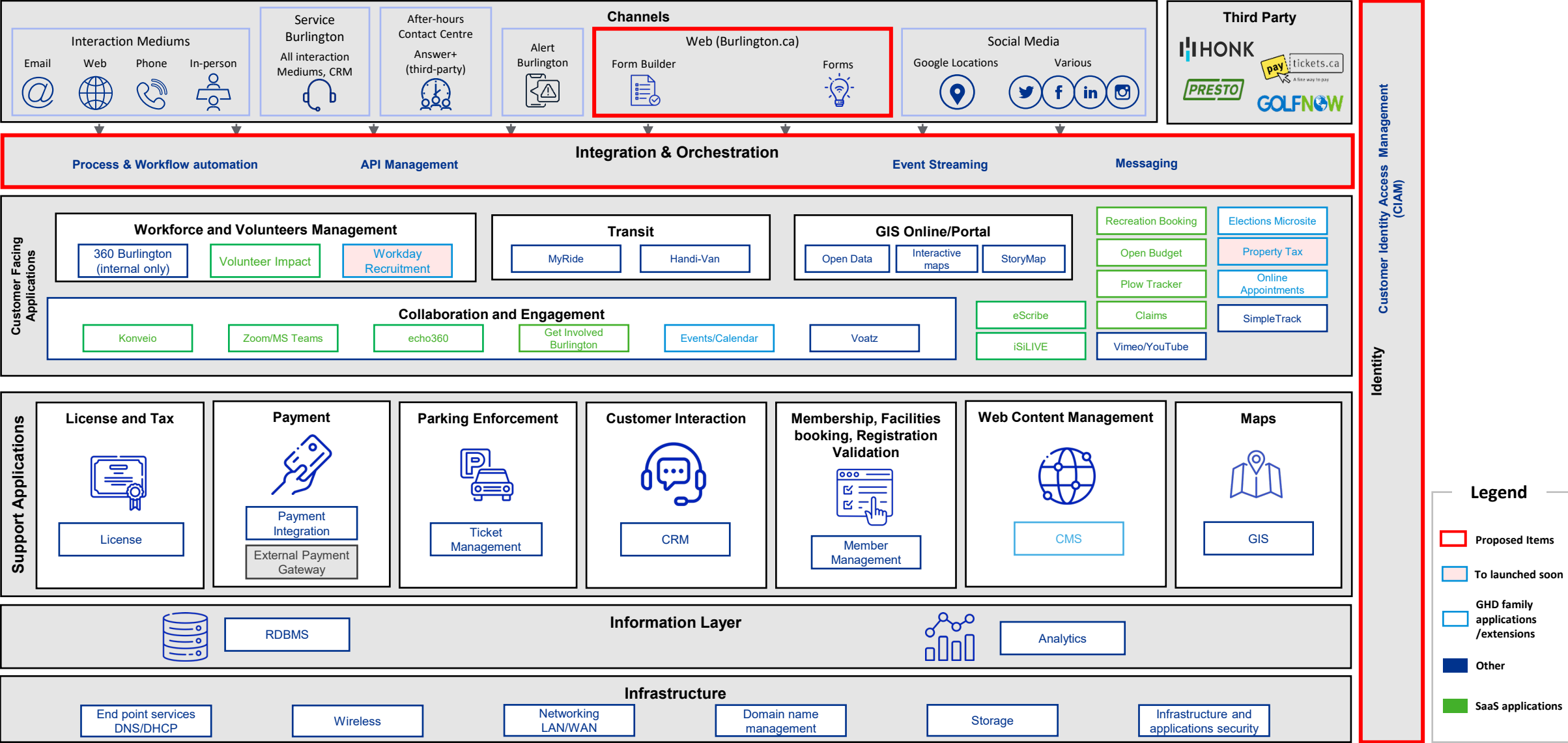
Architecture principles (2/2)

7. Data should be leveraged as an enterprise asset

8. Rationalize and consolidate applications portfolio to reduce duplication and overlap of functions and processes

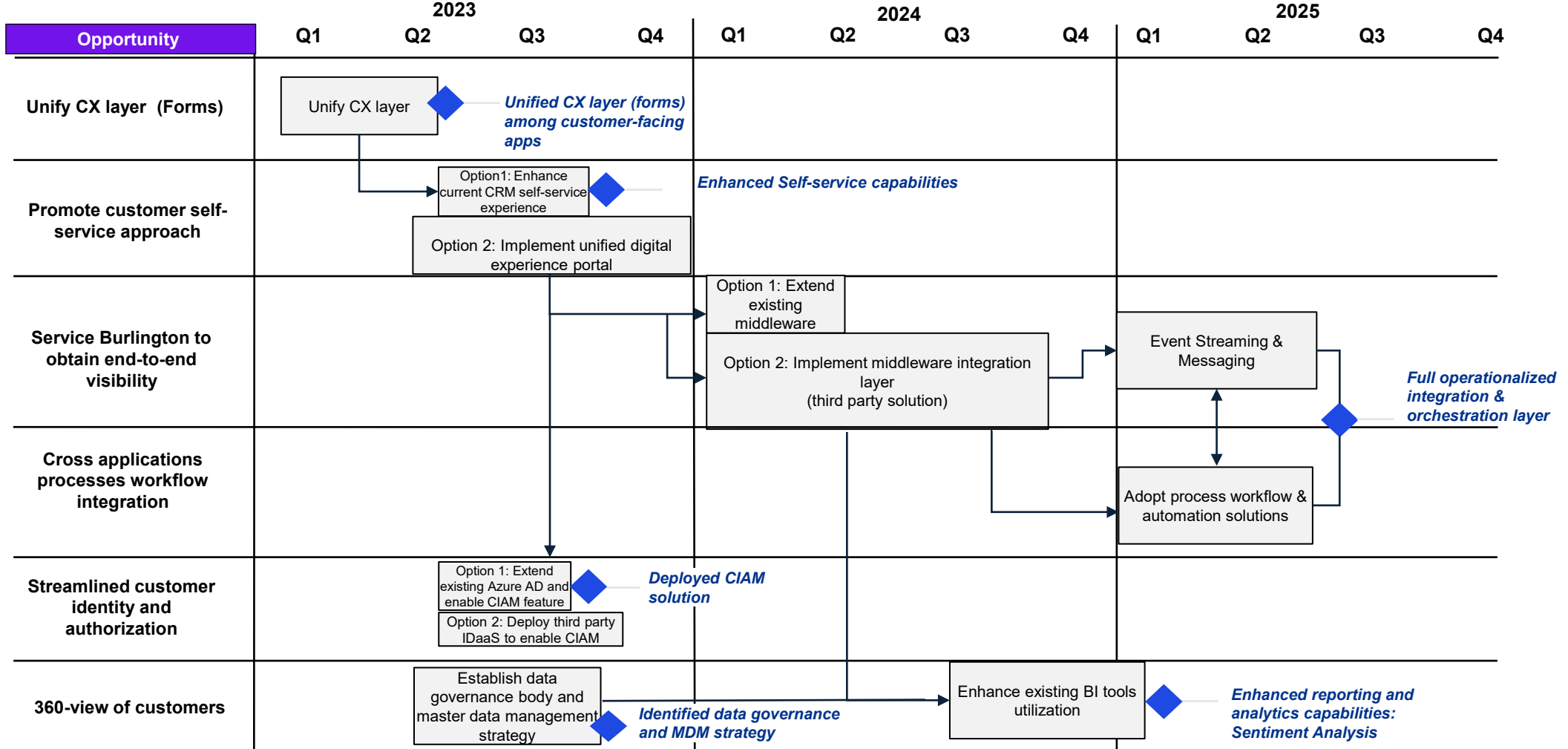
9. Affirm the alignment of CX initiatives and web architecture decisions with City of Burlington strategic directions (e.g., vision, mission, CX strategy, digital strategy).

Future State Architecture



Architecture Roadmap

Proposed three-year implementation roadmap



Legend



Milestone



Initiative



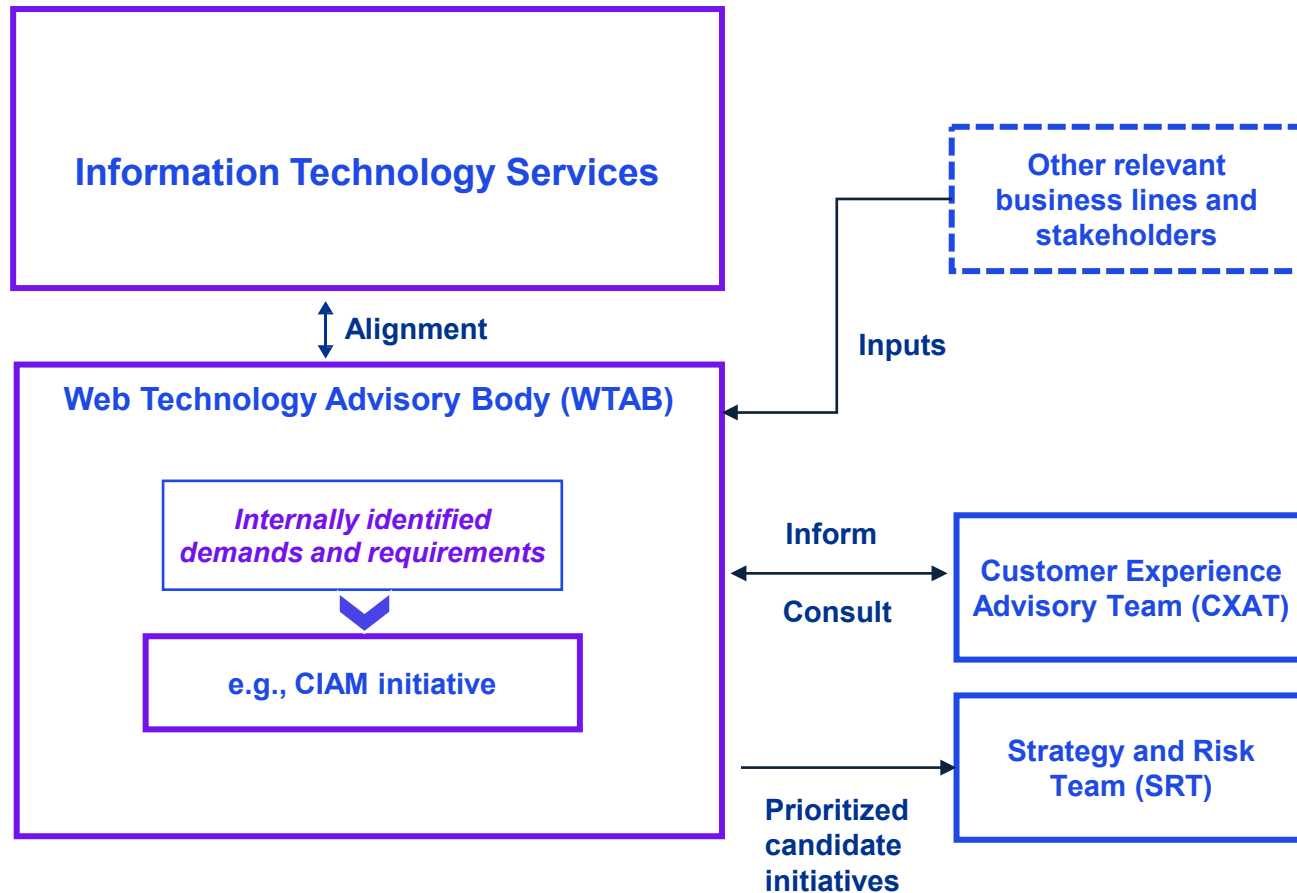
Dependency



Proposed Web Technology Advisory Body (WTAB)

CoB's Web Technology Advisory Body (WTAB)

Proposed advisory body



Mandates

- The purpose of the WTAB is to identify and prioritize web technology-related initiatives and provide inputs to the SRT
- It is essential that the WTAB has both executive representation from CoB stakeholders and cross-sectional representation to achieve the desired results. This advisory group comprised of relevant stakeholders with decision-making authority will have the collective responsibility to identify and prioritize candidate initiatives for CoB to pursue related to web technologies.
- CXAT will serve as the consulted body for CX-related guiding principles
- WTAB may get relevant inputs and demands from other business lines and stakeholders



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