City of Richmond

Report to Committee

To:	General Purposes Committee	**Date:**	September 19, 2016
From:	Grant Fengstad Director, Information Technology	**File:**	04-1300-01/2016-Vol 01
Re:	**Digital Strategy – Status Update 2016**		

Staff Recommendation

That the staff report titled "Digital Strategy –Status Update 2016" from the Director, Information Technology, dated September 19, 2016, be received for information.

Grant Fengstad
Director, Information Technology
(604-276-4096)
Att. 3

REPORT CONCURRENCE		
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**
Communications Economic Development Arts, Culture & Heritage Recreation Services Engineering Fire Rescue Transportation	☑ ☑ ☑ ☑ ☑ ☑ ☑	*A*
REVIEWED BY STAFF REPORT / **AGENDA REVIEW SUBCOMMITTEE**	**INITIALS:** DW	**APPROVED BY CAO**

Staff Report

Origin

The Richmond Digital Strategy was approved by Council on October 13, 2015 (Attachment 1). The strategy is a framework to guide strategic decisions regarding the City's digital services and infrastructure, enhancing the services and access for residents and strengthening Richmond's competitive advantage.

The vision of the Digital Strategy is:

- To optimize and integrate business processes which leverage technology innovation to deliver exceptional services.

The goal of the Digital Strategy is:

- To facilitate strategic thinking and better coordination around the innovation and enabling concepts of "Smart City", with the ultimate goal of embedding digital technology into the City's operations, information dissemination and communication with the residents and business community.

Since 2013, the Digital Strategy has been directed by a Steering Committee comprised of stakeholders representing each division within the City. Led by Information Technology, the Committee has proposed a multi-year plan that will see the phased roll out of various technologies over the next few years.

This report supports Council's 2014-2018 Term Goal #9 A Well-Informed Citizenry:

> *Continue to develop and provide programs and services that ensure the Richmond community is well-informed and engaged on City business and decision making.*
>
> *9.1. Understandable, timely, easily accessible public communication.*
> *9.2. Effective engagement strategies and tools.*

Analysis

The Digital Strategy identifies opportunities and clarifies needs, both within a service delivery model and in the customer-engagement platform. A customer-centric approach puts customers (the residents, business operators, visitors and partners of the City of Richmond) at the centre of everything the City does by developing and improving technology to provide customers with a better experience.

The Digital strategy calls upon the City to implement new technologies that integrate systems and provide new innovative capabilities for both web and mobile-based applications. As part of the overall roadmap for the digital strategy, a number of projects have been initiated, focusing on the five key strategic directions:

1 Extending the Reach of City Online Services
2 Expanding the City Connected Architecture
3 Extending Mobility for Staff
4 Integrating and Connecting City Infrastructure
5 Promoting Open and Transparent Government

While this strategy will deliver a great experience for our customers, our commitment to ensuring the security and the protection of information will continue to be a fundamental obligation. Protection of privacy and personal information is mandated by Provincial legislation.

Extensive privacy impact assessments currently exist and are required for all new systems that contain personal information. The focus of these assessments is to ensure compliance with privacy protection legislation. Evolving best practices for data security will continue to be adopted to ensure protection of all of our systems.

1. Extending the Reach of City Online Services

Implementing the Digital Strategy will extend the reach of all online services and will benefit the community by providing improved convenience and business processes. Several projects have already been completed and more are in progress.

a. **Customer Profile** – the project will simplify customer access to the City's online services and content. It will eliminate the confusion of maintaining separate identity accounts and credentials for City services. It will combine multiple accounts previously used to access the City's services such as recreation services, taxes, utilities, into a single profile with a single sign-on that provides access to all those services. The project's initial release will allow a customer to use a single account to access:

- recreation services for the family; and
- mobile app services.

The Customer Profile project is also the foundation for the Single View of Customer that is planned for early 2018 where all transactions and activities of each customer will be grouped and accessible using a Customer Relationship Management (CRM) application.

The project is on track for a late 2016 release to deliver recreation services integration to the mobile app, followed by a subsequent release schedule to add the Customer Feedback system, Grants Application system, Events Application system, Property Tax and Utility system among others.

b. **RichmondBC Mobile App** – delivers web and mobile-enabled services to our residents. The current project will enhance services to the community with the release of version 2 of the City's mobile app. Staff are transforming the app from a general information

application to a personalized transactional application. It has a brand new '*look-and-feel*' with significantly improved performance. Some of its key new features include:

- view family recreation classes and activities;
- check-in using a virtual Recreation Card on mobile devices;
- view recycling and garbage collection schedule based on customer profile;
- receive personalized information through a customer profile; and
- optional sign in using Facebook and Google social media accounts.

The upgrade project is on track for a 2016 Fall release.

c. **CRM / MDM (Customer Relationship and Master Data)** – the Single View of Customer, through the CRM and MDM initiative will allow staff to serve the City's customers better by providing a single reference view of the customer with historical interactions, transactions and customer inquiries. Staff will be able to provide timely, accurate updates to status enquiries, and will be able to see all information and transactions in a centralized location, rather than having to piece together customer information from separate applications. The customer will benefit by having one convenient place to manage their City transactions and activities. The information provided through these initiatives will be implemented on the City website where customers will be able to login and view information that is pertinent and relevant to them specifically.

This initiative is on track for an early 2018 release.

d. **Customer Feedback System** – The City introduced a web-based service that permits our customers to request a service or report an issue within the City. This system will route the request to the responsible department through an automated email. There are issues with the current system as requests made to the City require manual intervention and follow up. The system will be completely replaced as part of the CRM / MDM initiative.

This initiative is on track for an early 2018 release.

e. **ePlans Project** – improves business processes with City partners. It transforms a business process for approving development applications from a paper-based manual process to a fully digital workflow. Staff expect an improvement in process efficiency and a decrease in total end-to-end turnaround time for our partners. The project enables:

- electronic submissions of development plans and applications by service providers;
- manipulation, mark-up, and annotation of plans and applications by staff; and
- digital workflow for review and approval of submitted plans by staff.

The project was completed successfully and is being phased in since July 2016, initially focusing on servicing agreements.

f. **CoR Online Museum Collection System** – the objective for the museum online portal initiative was to digitize a collection of 2,100 artefacts, through scanning or photography, and to make the collection accessible online to the public. The Richmond Museum signed an agreement with UBC in 2015 to digitize the museum's collections that relate to the City's migration history and population. The City has an existing collection management technology that is used internally to reconcile digital media from the Museum, Art Gallery and Media Lab. An important part of this initiative was to make the technology ready for public use while enhancing usability and aligning with corporate communication standards. It was a short engagement and strong collaboration between IT, Community Services and Corporate Communications teams that delivered the enhanced portal. The website was officially launched by Mayor Brodie.

The project was completed and has been live since March 2016.

g. **Online Dog Licensing** – the City introduced the ability for residents to apply for dog licensing through an easy to use, intuitive web based registration process. This capability is only available in the City of Richmond and the City of Vancouver. All other local municipalities only provide dog licensing renewals online.

This module allows dog owners to apply for a dog licence and pay for the corresponding fees online instead of filling in a physical form and coming to City Hall to submit and pay or mailing a cheque.

This online system captures information about the dog owner, including name and address, information about the dog, including breed, colour, gender, age, and whether spayed or neutered, calculates the fee based on the information provided and obtains payment by credit card using a secure connection from any location.

The project was implemented and the system has been live since 2015.

h. **City Grants Application System** – the City supports the enhancement of a positive quality of life for all its residents, and Council recognizes that one means of helping to achieve this is through annual Grant Programs to support the work of community service organizations. The City Grants web-based system was introduced in 2013 to provide an integrated, user-friendly, efficient and effective online system for applicants. This System is designed to support online application submission for the Arts and Culture, Child Care, Health, Social, Safety, Parks, Recreation and Community Events grant programs. Since the initial implementation of the system, the various stakeholders of the system have been providing feedback to IT for ways to improve usability and to enrich the data collection for making important business decisions.

The update is on track for a September 2016 release, in preparation for the upcoming 2017 grant submissions.

i. **Sustainability Enhancement for the Online Event Application** – the project was to recognize Council's vision and effort to create a sustainable City by enabling event organizers to declare their sustainability commitment statement via the Online Event Approval system. The system offers a paperless, integrated approval workflow that

allows event organizers to state their responsibility for a sustainable environment while hosting City events, and collects reviewers' comments and endorsement as part of the business process.

The upgrade was completed and has been live since April, 2016.

j. **Stories of Nikkei** – Stories of Nikkei is a 10 video series to commemorate the history of the Japanese Canadian community of Steveston. Working in close collaboration with Community Services and Museum and Heritage, IT embedded the content in the RichmondBC mobile app while integrating iBeacon to deliver a self-guided walking tour in Steveston. This is a good example of seamless integration of historic information with the latest technologies to enable better connection between residents and Richmond's heritage and culture.

The project was completed and has been live since February, 2016.

k. **Taxes and Utilities Credit Card Payment** – the Tax and Utilities Credit Card payment module will allow taxpayers to pay their tax and utility bills using their credit cards. This is another step towards enhancing self-service capabilities to residents and business operators – being online instead of in line. They do not have to come to City Hall to transact their business; instead they can choose to do so any time and any place.

Using credit cards for tax and utility bill payments will at present incur a 1.75% service fee for the cardholder. This is a very low rate compared to other companies that provide a similar service. In turn, cardholders would be able to earn loyalty points and rewards from their banks or card-issuing companies (such as Visa and MasterCard).

For the City, the benefit of allowing credit cards as a payment method translates to a reduction in line-ups during the busy tax period, less time and resources allocated to doing cash reconciliations and dealing with fewer returned or bad cheques.

The project was completed and has been live since September 12, 2016.

2. Expanding the Connected City Architecture

To meet the desire of organizations and individuals to be connected to the Internet wherever and whenever they need, the City is expanding the connected City architecture by focusing on:

- increased reach of fibre optics and broadband infrastructure; and
- increased Wi-Fi (wireless Internet) availability.

a. **Fibre connectivity** – The majority of public facilities and City-owned buildings are connected to the City fibre network. This provides high speed, broadband services to the facility and enables new capabilities such as video conferencing for Firehalls.

b. **Public Wi-Fi** – The Public Wi-Fi project provides fast and stable wireless network connection for staff and the public at City Hall, Firehalls, Community Centres, select Heritage sites and a number of parks.

It also increases the reach of fibre optics and broadband network between City owned infrastructure. Rollout is currently underway, please refer to Attachment 2 for the list of sites already providing public wireless internet access using fibre optics and Attachment 3 for those that are currently a work in progress.

3. <u>Extending Mobility for Staff</u>

The Digital Strategy focuses on extending the mobility of staff to aid efficiencies. Extending the mobility of staff will enable new capabilities such as assigning work orders electronically to work crews and individuals. Employees will then access the work orders using a mobile application on a smartphone or tablet and provide real-time updates as the work is being done at the work site.

a. **My Pay/My Info (Employee Self-Service)** – this new service will enable employees to conveniently access and maintain their own personal information, thereby decreasing HR administrative time. Employees will be able to view, update and request changes to their personal data.

The employee self-service also has ePay functionality. Employees who have access will be able to:

- view their current and historical pay advices;
- manage their T4/T4A consent (provide and remove their consent to receive their T4/T4A via self-service); and
- view their current and historical T4/T4A.

The project is on target for a fall 2016 release.

b. **Employee Secure Access and Secure Single Sign-On** – the project will build upon the foundation in the Customer Profile project and will allow employees to access City applications through a secure single sign-on. The secure single sign-on will continue to enforce existing information systems security policies while offering employees the ability to sign in once to access all the applications to which they have permission.

The project is on target for a 2017 release.

c. **Mobile Inspections** – A new iPad based application is being jointly developed by the City and a local partner, to provide an easy to use, intuitive application that enables inspections to be conducted in the field efficiently and effectively. This application is possible due to the investments made by the City in Digital Strategy, specifically with the Digital Nervous Ecosystem (Middleware). The application will update inspection records in real time and provide an enhanced level of customer service.

This project is on target for a first quarter 2017 release.

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d. **Mobile Devices** – through extensive agreements with TELUS Communications company, staff have been able to extend mobility for staff, while at the same time, reducing our mobility costs. Through the new contract, monthly airtime operating costs will be reduced. Current mobile device handsets with the latest technology and timely operating software updates will be available to the City to assist with day to day work functions. These new devices will facilitate access to mobile applications (both in-house developed and external vendor offerings) to provide instant access to system information, increasing staff productivity and customer satisfaction.

The agreements have been executed effective July 1, 2016.

4. <u>Integrating and Connecting City Infrastructure</u>

Interconnectivity among systems is key to running effective organizations in the hyper-connected global world, and municipal governments are no different in their need for integration.

To enable information and data to be shared easily from one system to another and one department to another, the Digital Strategy is focused on:

- creating a Digital Nervous Ecosystem; and
- integrating systems to the Digital Nervous Ecosystem.

a. **Middleware (Digital Nervous Ecosystem)** – the project integrates and interconnects City infrastructure and systems securely, which contributes to increased convenience for customers and increased mobility for staff. Following are some examples of capabilities that the Middleware project will enable:

- **Customer Profile and mobile app sign-on** – the customer will experience a secure and seamless single sign-on.

- **Mobile garbage and recycling services** – the customer will see the garbage and recycling schedule for their property on the mobile app.

- **Personalized view of recreational activities** – the customer will see their registered activities on the mobile app.

- **Integration of Public Works Work Order and employee management** – the latest employee contact information will be available for use in a Hansen Work Order. When an employee needs to be contacted, a notification will be sent directly to the employee's email inbox.

- **Integration of Property Address with Public Works Work Order** – new property addresses that are registered with AMANDA will be synchronized with Hansen to allow Work Orders and Asset entries to take advantage of the new registration immediately.

- **Unify Finance and Work Order systems' budget and cost data** – Work Order accounts will be validated in real-time against Finance's Chart of Accounts during Work Order entry. This will improve data quality and efficiency in the Work Order

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process, and reduce budget data duplication across multiple systems. Work Orders will trigger Finance account creations in real-time. Full Work Order cost detail can be retrieved on-demand from the Finance system. Staff will no longer need to access multiple systems, and navigate through multiple screens to view cost details.

- **Automatic cost calculation for vehicle use** – the cost of using a City vehicle will be calculated automatically based on data synchronization between the Finance and Work Order systems.

The project is on track for a 2016 Fall release.

b. **Fire Hall Video Conference** – the project brings virtual meetings to Richmond Fire Halls. Aside from video conferencing between sites, the technology also allows a site to broadcast to all other sites. The Fire Chief is able to address all Fire Rescue staff periodically without the need for all staff to physically be present at one site for the event. This saves staff travel time, reduce physical risk, and improves availability of staff to respond to emergencies.

The project was completed and has been live since June 2016.

5. <u>Promoting Open and Transparent Government</u>

Open and transparent government has become more important than ever. For municipalities, transparency around public meetings is especially important as residents learn about policy decisions that affect their lives and see how tax dollars are being spent.

a. **Council Meetings Video Streaming** – the Video Streaming project delivers live video at Council meetings and other meetings. Videos are accessible live on the web, or at a later time also through the web for those who missed the live meeting.

The project was completed and has been live since July 2014.

b. **City of Richmond Website** – the City's richmond.ca website home page was redesigned to improve functionality and visual attraction, while addressing some usability issues identified through user testing. The new homepage also increased focus on the City's e-services, which are accessible 24-7 to residents. A new and improved Search engine for the website was introduced simultaneously, making it easier for users to find specific information on the site. Website traffic continues to grow, with nearly 2 million visits in 2015. There was a 13% growth in both site visits and site visitors in 2015 over 2014.

The new homepage was launched in the Fall of 2015.

c. **Social Media** – the City continues to expand its use of social media (Facebook and Twitter as primary channels, and also Instagram and YouTube) to provide public information, market civic events and programs and engage with the community. There has been a steady increase in the volume of social media posts, as well as public interactions via social media. In spring 2016, the Social Media Strategy was revised to ensure more consistency in the frequency and quality of posted content. As well, the City began using promoted/paid Facebook content to more effectively reach targeted

audiences. This has led to a significant increase in the public reach and interaction of the City's individual Facebook posts.

d. **Let's Talk Richmond** – since 2013, the City has conducted nearly 50 public engagement programs via Let's Talk Richmond, an online engagement site, which augments traditional public consultation methods such as public open houses and is accessible any time. This has greatly increased citizen participation in the City's public consultation activity. The site currently has nearly 1,500 registered users who participate in various public consultation activities on an ongoing basis. Since its inception, the Let's Talk Richmond site has had more than 170,000 visits, with more than 45,000 visitors accessing project libraries and nearly 4,000 visitors responding to surveys or otherwise participating in the consultation activity.

e. **Enhanced GIS for Public View** – the Richmond Interactive Map (RIM) public viewer was redesigned using new technology which provides access to more than 100 layers and aerial photography. The new system is more user friendly, reliable and provides a faster response time, and is accessible from a computer, tablet or phone.

This project was launched in July 2016.

f. **Child Care Finder** – the Richmond Child Care Locator was added to the RIM, providing residents with quick and easy access to child care facilities information. In addition to child care facilities, the interactive map displays schools, community centers, sport facilities and other related features. Residents can get detailed information by simply clicking on the map symbol. The Child Care Locator is accessible from a computer, tablet or smartphone.

This project was launched in 2015.

g. **Utilities Usage** – the My Property Account is a convenient way to view water use information anytime, anywhere, from a computer or mobile device. The Utility Account option provides a view of the water meter readings for the billing period and also provides an easy-to-read graph or chart format. Other details include the reading date, number of days, meter reading, consumption and billing and account history. This information will help residents to identify water leaks and become more aware of water use habits, helping to encourage water conservation.

This project was launched in May 2016.

h. **Open Council Minutes Web Search** – the project will launch a new searchable Open Council Minutes database, available on the City of Richmond website. It will provide residents with fast, easy and efficient access to important information through a self-service tool available any time, which offers a variety of features including keyword search capabilities. This will result in improved access to information, an increase in public engagement and the promotion of openness and transparency.

The project is on track for release in early 2017.

i. **Richmond Archives Web Search** – the project will launch an upgraded searchable Archives database, available on the City of Richmond website. It will allow the Archives to provide a new level of efficient, 24-hour online service which will benefit the public, Council and staff by increasing access to Richmond's past and present.

   The new site will improve the user experience by having an advanced map search, popular topics for all records search, a user-friendly interface, simplified navigation, high-resolution photographs and handy search tips.

   Newly featured on the site will be clickable maps which will enable users to focus searches to a particular location. There will be over 1,000 maps available online showing Richmond's development from a small fishing and farming community to a large modern city.

   The new site will also feature over 5,000 newly digitized photographs from Ted Clark's vast photographic collection of streetcars, trolley coaches, Interurban trams and trains. The Interurban Tram collection will have its own convenient search page, as will the BC Packers collection.

   The project is on track for an October 2016 release.

j. **Economic Development Website** – since 2012, the City has implemented a comprehensive business development initiative to effectively and proactively engage, service and support existing Richmond businesses, attract new ones and develop industry partnership prospects. As part of this initiative, the City's economic development website (www.businessinrichmond.ca) enables Richmond businesses to seamlessly access City Hall information and services, specifically developed to meet the needs of business clients and prospects. It features comprehensive information on Richmond's business advantages, strategic sectors and quality of life. Access to economic development and business liaison services for businesses that are based in or are looking to locate to Richmond is also available through the website. It serves as a central broadcast point for the Richmond business brand, local economic development content and social media channels. Access to the latest local business indicators and commercial facility search, are unique interactive features available to businesses through the new online portal.

   This service was originally launched in 2012 and was recently re-launched in August 2016 with a new updated look, up-to-date business information, integration with social media and online marketing and a mobile version.

k. **Election App** – in 2014 a new mobile application was released to further engage residents in the voting process for the general local and school election. The Richmond Election app was designed as a way to help voters access relevant election information on-the-go from their mobile devices and can be downloaded for free on iPhones and Android smart phones. It provides essential information, including—who can vote, where to vote, voting day information, and candidate profiles. Most importantly on election day, the Richmond Election app provided real time updates of the election results to voters.

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This project was launched in September 2014.

l.   **RCMP Crime Map** – the Criminal Activity Map shows where recent property crimes have occurred in Richmond. This information is distributed to raise awareness and help educate property owners on crime prevention techniques. Residents can select the information to be displayed by crime locations, crime type and date.

Residents can also view Richmond neighbourhood maps for current crime summaries of residential break and enters, auto thefts and theft from motor vehicles. Visitors to the site will be able to click beneath the neighbourhood maps on the words Residential Break and Enters, Auto Theft and Theft from Motor Vehicle to link to home and auto security tips. The security tips section has information about securing various entry points on homes and vehicles.

This web application provides greater awareness about the criminal activity in Richmond neighbourhoods and identifies measures residents can take to prevent property crimes and auto-related thefts.

This service was launched in 2012.

Financial Impact

None.

Conclusion

The Richmond Digital Strategy implementation is well underway with projects aligning to the five focus areas as outlined and approved in the Council meeting of October 13, 2015. Staff are on track to deliver key projects over the next two years.

The focus in 2017 and 2018 will be finalizing a single view of the customer along with a new tool that will enable staff to better service customers. A new website will also be launched that will provide the ability for customers to have visibility to the services and information they most care about. Additionally, a completely new recreation management system will be integrated into our digital strategy that, along with the other key initiatives, will propel the City of Richmond to the forefront of innovation for municipal government across North America.

Vincent Chu
Manager, IT Innovation and Development
(604-247-4478)

:vc

Att. 1: Richmond Digital Strategy
Att. 2: List of locations with fibre and Wi-Fi service completed
Att. 3: List of locations with fibre and Wi-Fi service to be completed

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RICHMOND'S DIGITAL STRATEGY
SEPTEMBER 2015

Richmond

CONTENT

The Internet of everything
changes everything.

– John Chambers, chairman and CEO of Cisco

EXECUTIVE SUMMARY

The City of Richmond is undertaking the development and implementation of a new Digital Strategy that will support the City's vision of being "the most appealing, liveable, and well-managed community in Canada."

A "Digital Strategy" is defined as the use of digital tools, channels and products to achieve a goal or goals. For the City of Richmond, it means transforming how the City is able to leverage digital tools and technology to better serve our citizens and improve the workplace for our employees. The vision of the Digital Strategy at the City of Richmond is:

> To optimize and integrate business processes which leverage technology innovation to deliver exceptional services.

The Digital Strategy at the City of Richmond is directed by a Steering Committee comprised of representatives and stakeholders from each division across the City. Led by Information Technology, the Committee has proposed a multi-year plan that will see the phased roll out of various technologies over the next three to five years. Each division stakeholder has brought his or her own insight and vision to the project, and has helped to create a broad-based, extensive strategy that will propel the City's current digital technology approach to one that is at the forefront of North American municipalities.

Over the past decade, the City of Richmond Information Technology department has set the foundation for the Digital Strategy by establishing a robust technology platform throughout the City that has served the citizens well to date. Various service-specific systems have been successfully utilized for many years to help the City's different departments execute on their mandates. These systems include:

- Work Order Management System
- Property Management System
- Program Registration System
- Finance and Human Resources System
- Tax Collection System
- Traffic Control Management System

While these systems have performed well and met the needs of the City and the community, the time has come to shift from a primarily service-centric approach to customer-centric. A customer-centric approach puts our customers (the citizens, business operators and partners of the City of Richmond) at the centre of everything we do by developing and improving our technology to provide them with a better customer experience.

Global technology use has shifted to become more mobile focused and self-serve. Many industries have been transformed by embracing new digital technologies to provide the best in customer service. The finance and travel industries, for example, have moved their previously paper-heavy and process-based businesses online.

The predominance of web-based organizations such as Amazon, Yahoo, Google, Facebook and others has shifted peoples' expectations of real time delivery and responsiveness. The unparalleled influx of information that people receive on a daily—often hourly—basis has created a need for organizations to more strategically disseminate the information they are providing so it best meets their customers' needs. City of Richmond citizens will demand information from the City that is easy to access, customized and flexible.

The Internet is becoming the town square for the global village of tomorrow.

– Bill Gates, founder, Microsoft

At the core, establishing the City of Richmond as customer-centric will require a shift in our digital strategic direction and the introduction of several new technologies. The strategic direction for the Digital Strategy is focused around five key areas:

1. Extending the reach of City online services

2. Expanding the connected City architecture

3. Extending mobility for staff

4. Integrating and interconnecting City infrastructure

5. Promoting open and transparent government

Each of these strategic directions will be addressed, not by a series of individual actions and activities, but by an integrated technology approach that will bring together technology and departments. The Digital Strategy will be focused around the development of a "Digital Nervous Ecosystem" (DNE), an integration system that will bring together the various business systems at the City of Richmond.

Components of the Digital Nervous Ecosystem include several new technologies that will be seamless to our customers (City citizens, businesses and employees), and will result in an improved mobile and web experience. The Digital Nervous Ecosystem will also provide the City with significantly improved data analysis, as it will include improved data warehousing and Business Intelligence. This will enable the City to obtain more information about usage of City services and customer experiences and preferences. Ultimately, this allows the City to provide significantly improved services and offerings to its citizens, as employees and Council are able to make more informed decisions on how to spend taxpayers' money and resources.

The Digital Strategy will be transformative for the City of Richmond and its citizens as the City continues to grow in population at a rapid rate. Over the next decade, the burgeoning population will create an increase in demand on City services. Implementing this strategy now will allow the City to be ahead of this growth curve and well prepared to meet the changing needs of the City.

Take Richmond to the forefront of technology in terms of Municipal Government.

– George Duncan, CAO, City of Richmond

INTRODUCTION

As the global marketplace evolves to being more digitally enhanced and mobile, so too are North America's municipalities moving towards a more digital approach. The City of Richmond has always been committed to providing its citizens with the most innovative technologies to best serve their needs. As technology evolves, so will the City of Richmond.

This document provides an overview of how the City of Richmond is leveraging today's digital technologies to transform its current customer service approach from being service-centric to customer-centric. It will show how the introduction of a multi-layered technology system called the "Digital Nervous Ecosystem" (DNE) will enable the City to capitalize on new technologies to evolve current business systems into mobile-enhanced and web-based technologies.

It will outline the strategic direction that the Digital Strategy will take, and it will highlight how a "Day in the Life' of different City of Richmond customers will improve through the Digital Strategy.

It will demonstrate how evolving technologies to a digital platform will help the City of Richmond realize its vision of being "the most appealing, liveable, and well-managed community in Canada."

THE PURPOSE

The only wrong move when it comes to Digital Transformation is not to make any move at all.

– Dider Bonnet, Senior VP CapGemini

Over the past few years, there has been a visible and dramatic transformation in how organizations (including municipalities) share information with individuals. The evolution of technology to web and mobile along with the introduction of Social Media has increased the amount of information that people receive and process. At the same time, the vehicle used to disseminate and share this information has shifted equally dramatically to predominately web-based and mobile-enhanced technologies that capture and share information on demand in a customizable and flexible way.

For the citizens, businesses and employees of the City of Richmond, this has had many different impacts—both professionally and personally. More and more businesses are available online, and many offer their goods and services over the Web or via mobile application.

WHY HAVE A DIGITAL STRATEGY?

The times are continuously changing for municipal governments. These statistics from the Canadian Internet Registry Association from 2012 set the stage for the drivers behind this new Digital Strategy:

- 87% of Canadians have Internet broadband access at home.
- 53% of Canadians have mobile Internet access (estimated at more than 70% in 2015).

Expectations of on-demand information and services—from shopping to finance to travel, etc.—are now 24 hours a day, seven days a week.

For the City to continue to effectively serve its constituents, it needs to align its services towards meeting the needs of this growing segment. Digital Strategy is more than simply 'putting services on the Web'. It is about rethinking how those services are defined and delivered, to ensure that our customers are at the forefront of all our efforts.

The objectives and desired outcomes of the Digital Strategy are:

- To fully integrate and enable all systems at the City to provide Web- and Mobile-enabled services to our citizens.
- To ensure citizens of Richmond have a cohesive, integrated customer experience.
- To delight our customers with an integrated business process approach.
- To provide a single eCommerce engine to simplify and streamline online customer transactions.
- To make better business decisions for the citizens of the City of Richmond by having improved data analysis and Business Intelligence.

While this strategy will deliver a great experience for our customers, our commitment to ensuring the security and the protection of information will continue to be a fundamental obligation. Protection of privacy and personal information is mandated by Provincial legislation.

Extensive privacy impact assessments currently exist and are required for all new systems that contain personal information. The focus of these assessments is to ensure compliance with privacy protection legislation. Evolving best practices for data security will continue to be adopted to ensure protection of all of our systems.

CURRENT STATE

The City of Richmond exists to serve the citizens and businesses of Richmond. There are dozens of business systems that the City uses to provide services to our customers and to keep the City operating.

Historically, systems at the City of Richmond were purchased and implemented to specifically address the needs of the service area for which they were responsible. These systems are best-in-class products for the service they deliver and are used by many municipalities in North America. At the time, there was no method of integrating the systems or the data stored within them. As a result there is duplication of data and no single representation of fact (no single source of truth for data).

This segregation of systems is typical of many organizations that embraced technology early. It also leads to the challenge of what to do with systems that are unable to support newer technologies such as Web-based access, self-service and mobile. Those systems that do provide online capability often require unique sign-on to each separate system, rather than a single sign-on which is more user friendly. Ultimately, disparate systems make it difficult for the City to have a holistic view of data and understand what the data is telling us.

When faced with aligning 2015 customer expectations and needs with current systems, the City of Richmond decided on a new Digital Strategy that would provide integration between systems and facilitate mobile enablement.

A committee with representation from each division in the City was struck to develop a strategy based on best practices from digital strategies of other municipalities infused with the innovative spirit and business strategy of the City of Richmond.

Mobile: The term 'mobile' in a Digital Strategy refers to anything relating to cellular phones, handheld computers, and similar technology.

Web enabled: Web enabled refers to a product or service that can be used through, or in conjunction with, the Internet or World Wide Web. A Web-enabled product may be accessed through a Web browser or be able to connect to other Web-based applications in order to synchronize data.

Digital Nervous Ecosystem (DNE): A connecting layer of technology that sits on top of multiple different systems and channels data from system to system. Much like the human body has a Central Nervous System whose function is to integrate information it receives from all parts of the body and then coordinate and influence the activity of the body parts, the Digital Nervous Ecosystem's function is to integrate information from multiple different systems.

Fibre optics: Fibre optics are cables that transmit information from computer to computer. Computers use fibre optics to provide broad access to the Internet.

Broadband: A high-capacity transmission technique using a wide range of frequencies, which enables a large number of messages to be communicated simultaneously.

Wi Fi: The term WiFi refers to wireless networks that allow computer systems to network and to speak to each other.

OPPORTUNITIES

The systems currently in place at the City of Richmond provide a solid foundation on which to build the Digital Strategy. By introducing several new layers of technology through the Digital Strategy, the City of Richmond has an opportunity to showcase itself as an innovator and leader in the concept of being a "Smart City".

Innovation has always been at the core of the City of Richmond's approaches to technology and other areas. Staying in line with—or ahead of—global trends in municipal government is key to advancing the City's infrastructures and services delivery for our citizens, business owners, visitors, partners and employees.

The implementation of the Digital Strategy will provide many opportunities for the City to move from a service-centric organization to a customer-centric organization and will leap the City forward to current technology trends in a cost effective and timely way. The following are examples of opportunities that inspire and shape the Digital Strategy:

- The demographic of the City of Richmond is continuing to shift in ethnic diversity with Asian origin citizens approaching a majority of the average population (49%). As well, there is an increase in resident population in the 20-30 year range. These demographics are digitally savvy and will expect more of the City services to be web and mobile enhanced.

- Significant commercial and residential development in the City provides an opportunity for the City to leverage digital technology in City infrastructure that supports this development.

- Improvements in data analysis and Business Intelligence solutions allow the City to better understand how its citizens, business operators and visitors use the City's infrastructure.

- The trend towards mobile provides an enormous opportunity for the City of Richmond to better connect with more of its citizens and business owners and visitors. Mobile apps such as the City of Richmond app enable both the City and tourism partners to showcase their offerings in an easy to access, visually stimulating and easily navigable way. Feedback on the new app is a positive indicator of how big an opportunity the mobile story is for the City.

We have technology, finally, that for the first time in human history allows people to really maintain rich connections with much larger numbers of people.

– Pierre Omidyar, founder, eBay

TRENDS

The City of Richmond has always prided itself on staying not just aligned with global technology trends, but ahead of them. Over the past several years, the technology industry has clearly shifted to an on-demand, highly connectable, cloud and mobile industry, where customization and localization is integral to successful delivery.

MOBILE

According to the 2015 Internet Report released by Kleiner Perkins Caufield & Byers, a leading technology Venture Capital firm, the mobile story continues to be the single, largest trend that all organizations need to pay attention to. The report cites some interesting statistics:

- Mobile Internet use is growing faster than Internet usage in general. There are 2.8 billion Internet users, up 8 percent from 2014, and 2.1 billion mobile Internet users, an increase of 23 percent.

- Mobile data usage rose 69 percent last year, and 55 percent of mobile data traffic is from video.

- In 2008, Americans spent 20 minutes a day on average with the mobile Web. This year, they spend close to three hours, more time than they spend on laptops.

INTERNET OF THINGS (IOT)

In 2015 and beyond, the focus for many technology giants is bringing together the "Internet of Things" or IoT as it is known. The IoT is a proposed development of the Internet in which everyday objects have network connectivity, allowing them to send and receive data. It involves connecting all the various devices that could access the Internet—tablets, mobile, laptops, desktops, home alarm systems, appliances, etc. The IoT is fundamentally what the City of Richmond's Digital Strategy is all about. Connecting all our various disparate systems through a technology layer that allows us to better share and manage information to provide our citizens with better customer service.

CUSTOMIZED USER EXPERIENCE (OR USER-CUSTOMIZED PORTAL)

Thanks to the prevalence of social media and Google, the technology of websites has evolved to be focused not just on usability but rather on customer experience. Users of these sites sign in and customize the portal or front page of the site to tailor to their specific needs. Once the site is 'set up', content is pushed to the front end of the site that is specifically relevant to the user. Our "Day in the Life" examples demonstrate how the City of Richmond will utilize this technology ability as a key part of our Digital Strategy.
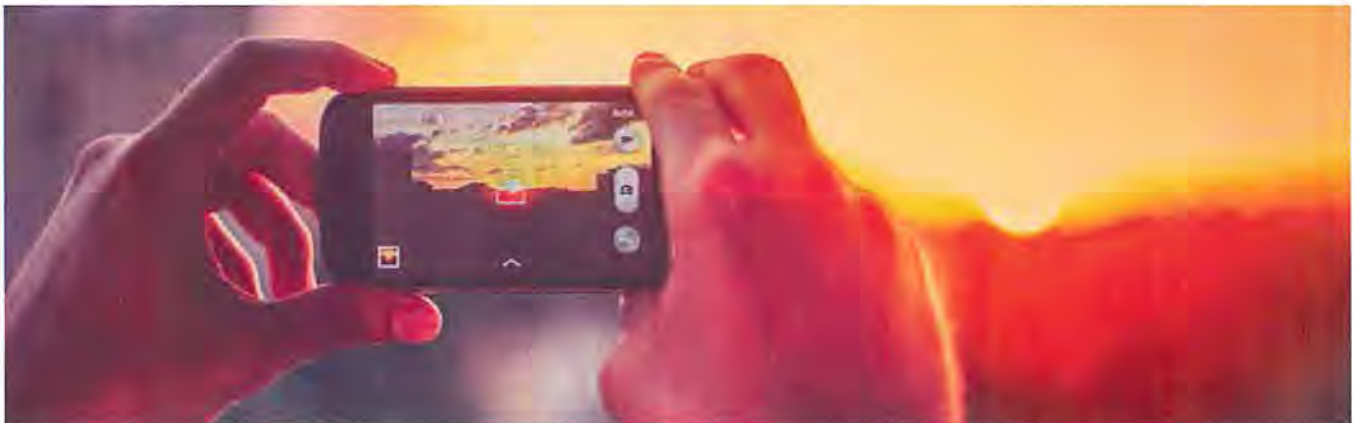
STRATEGIC DIRECTION

VISION

The vision of the Digital Strategy for the City of Richmond is:

> To optimize and integrate business processes which leverage technology innovation to deliver exceptional services.

Achieving this vision will require contribution and support from throughout the City—from all divisions and from every level.

GOAL

The goal of the Digital Strategy is:

> To facilitate strategic thinking and better coordination around the digital innovation and enabling concepts of "Smart City', with the ultimate goal of embedding digital technology into the City's operations, information dissemination and communication with the residents and business community.

Achieving the goal of making the City of Richmond a web- and mobile-enabled "Smart City" requires a well thought out strategy direction, focused on specific deliverables and key areas. The following five areas of focus have been identified as key to the success of the Digital Strategy:

1. Extending the reach of City online services
2. Expanding the connected City architecture
3. Extending mobility for staff
4. Integrating and interconnecting City infrastructure
5. Promoting open and transparent government

Mobile is the future and there's no such thing as communication overload.

— Eric Schmidt, Google

STRATEGIC DIRECTION:
1. EXTENDING THE REACH OF CITY ONLINE SERVICES

The City of Richmond currently offers several services via the City of Richmond website for citizens and business owners. Business licenses, pet licenses, parking tickets, and more can all currently be accessed via www.richmond.ca. Generally the website is currently designed by division or function.

In this era of digital government, our citizens need and want to be at the core of our business processes. We know our customers—the citizens and business owners of the City— don't necessarily care about the organizational structure of our municipal government nor should they need to know that to effectively deal with the City via our website. We want to enable them to do their business, to live their lives within the City of Richmond, supported by our organization.

Implementing the Digital Strategy at the City of Richmond will extend the reach of all of our online services. The benefits to the community will be as follows:

- **Improved convenience:** Government services (such as bill payments, inquiries, licenses, etc.) will be available on demand, 24/7.

- **Improved business processes:** The City of Richmond is committed to supporting our business community. The new Digital Strategy has been developed with business in mind—helping them to become more efficient and effective. The Digital Strategy will focus on helping businesses save time by reducing the bureaucracy often associated with working with government. Access to more online business-related services such as procurement opportunities (both new bids and in progress or won opportunities), business licenses registration and re-registration, and paying bills and receiving payments online illustrates how transformative the Strategy will be to the Richmond business community. The City will continue to work with various business associations to identify further business opportunities that can be enhanced via the Digital Strategy. Many of the efficiency gains from the digital strategy and a more web-enabled government will flow directly to the business bottom line.

STRATEGIC DIRECTION:

2. EXPANDING THE CONNECTED CITY ARCHITECTURE

A positive outcome of the global shift to increased connectivity through digital technology has been the increase of communication not only from business-to-consumer but also business-to-business and within the walls of an organization. Communication within and among organizations is no longer the domain of face-to-face, voice or even written correspondence. Today, internal communications and communications from one organization to another is increasingly shared over digital channels, i.e. the exchange of data and information over the Internet. This increase in digital communication while extremely positive on the one hand, as it creates much more efficient channels of communication, is also challenging on the other hand, for more people are demanding to be connected at all times than ever before.

This increase in the desire of organizations to be connected to the Internet at all times, wherever and whenever the need, has resulted in a dramatic increase in the need for more bandwidth speed and mobility. To mitigate this challenge and to provide the City of Richmond businesses and citizens with the access they need, the City of Richmond is expanding the connected City architecture by focusing on the following:

- **Increased fibre optics and broadband:** At the City of Richmond, the use of fibre optics and broadband has enabled various City departments and offices at different locations to connect and access more efficiently the City's network, data and systems. This connectivity will increase over the next few years as we roll out the Digital Strategy. More public spaces that are city-owned or managed will have increased fibre optic and broadband capability.

- **Increased Wi Fi availability:** One primary focus will be the introduction of more public spaces that are Wi Fi-enabled. Currently, the City of Richmond provides free Wi Fi access to the public on City Hall premises. This will be expanded to encompass other city-owned and managed facilities, buildings and community centres, allowing citizens and staff to better communicate and share information with one another.

STRATEGIC DIRECTION:

3. EXTENDING MOBILITY FOR STAFF

In 2015, nearly 70% of Canadians own a smartphone. This number has been steadily increasing over the past decade and is projected to continue to rise over the next five years. Municipal governments by and large are not maximizing mobile technology to further their business objectives and empower their employees—specifically those employees that work in the field rather than an office. The City of Richmond Digital Strategy is focusing on extending the mobility of our staff to further help them do their jobs in a more effective and efficient way.

To extend the mobility of City employees, the City is developing a connective layer of technology known as the Digital Nervous Ecosystem that sits on top of various systems and channels information as needed to mobile devices. This mobile enablement means that work orders would be electronically assigned to work crews and individuals. Employees would access the work orders through a mobile application on their smart phone or tablets, and provide real-time updates as the work is being done and completed right at the work site.

In my opinion, the future of mobile is the future of everything

– Matt Galligan, SimpleGeo

STRATEGIC DIRECTION:

4. INTEGRATE AND INTERCONNECT CITY INFRASTRUCTURE

Interconnectivity among systems is key to running effective organizations in the hyper-connected global world, and municipal governments are no different in their need for integration.

The City of Richmond Digital Strategy will be focused on integrating and interconnecting these systems to enable information and data to be easily shared from one system to another—and one department to another.

- **Creation of a Digital Nervous Ecosystem:** The new City of Richmond "DNE", or Digital Nervous Ecosystem, is a connecting layer of technology that sits on top of multiple different systems and channels data from system to system.

- **Integration of various systems to DNE:** Currently there are multiple systems that operate independently to capture and store information points from various City of Richmond departments or functions. For

example, in the City there are sensors that exist in roadways, traffic lights, pump stations, etc. These collect data points of information as they are captured but the information typically sits in one database and is not shared with other areas. With the DNE sitting on top of the different systems, these data points can be shared from system to system. As issues or unexpected events happen, these sensors will provide valuable data to the DNE triggering other systems to automatically respond and start business processes.

Most importantly, this seamless integration of data sharing and business process is not overtly apparent to the citizens of Richmond. The citizens will only know that the faulty light at the intersection was fixed or that the potholes in the highway were repaired—the sharing of information through integrated systems resulting in an improved customer experience for citizens.

STRATEGIC DIRECTION:

5. PROMOTE OPEN, TRANSPARENT GOVERNMENT

In the past several decades, open and transparent government has become more important than ever for North Americans. For municipalities, transparency around public meetings is especially important as citizens learn about policy decisions that affect their lives and see how their tax dollars are being spent. Proactive citizen participation helps improve policy outcomes. Technology has enabled governments to be much more open and transparent. Tools such as streaming video of council meetings or other meetings, social media websites, virtual town halls and mobile apps are making it easier than ever for the public to provide input to government, and feel more connected and engaged.

Engaging with our citizens and listening to their input and feedback has always been important to the City of Richmond. We have provided many different vehicles for citizens of Richmond to communicate with the City and City Council. The Digital Strategy will support and further this commitment to our citizens and allow them to communicate in a much more efficient, timely and broader way. Using online engagement tools, it is easy for more people to contribute ideas of community improvement and provide feedback on current initiatives. Tools that will be used to further the City of Richmond's efforts for an open and transparent government include:

- Streaming video (for use at Council meetings or other meetings)
- Social media websites
- Virtual town halls
- Mobile apps

These tools are a convenient way for citizens to stay engaged with the government decision-making about the community and in turn, help the organization collect timely and actionable input from citizens.

A DAY IN THE LIFE OF A RICHMOND CITIZEN

Implementation of the Digital Strategy will transform how the City of Richmond interacts with our customers. The following Day in the Life scenario envisions what that could mean to our citizens and staff.

Meet Jennifer, a Richmond resident. She's married, has 2 children and a dog. She is doing some renovations to her home. In her neighbourhood, the City is considering a rezoning application for a new condo development and she and her husband are keen to learn more about it. She has a profile on the City web portal and has signed up for the City services that are important to her. Here's how Jennifer's day could look after the Digital Strategy.

9pm

Hi Jennifer, Tomorrow is garbage collection day.

7am

Inbox (1)

Hi Jennifer, There will be road construction today, please check for an alternate route to your destination.

11am

She is notified that her children's swim class has opened up. While using the portal to register them, she also renews her dog licence.

My Richmond Services

SWIM

There is one payment system that processes the payment for all services.

The registration system books the swimming class.

The permit system renews the dog licence.

She receives the dog tag in the mail.

12pm

She notices a pothole in the street, so she takes a picture using the RichmondBC mobile app to report it to the City.

RichmondBC App

The work order system creates a case and schedules staff to complete the work.

Hi Jennifer, Work is complete.

3pm

She schedules a plumbing inspection for her new home renovations.

SCHEDULE INSPECTION

The property system books an inspection and schedules an inspector's time.

7pm

Hi Jennifer, City Council Meeting is tonight. On the Agenda: **New Condo Development**

WATCH IT LIVE ONLINE

NEXT STEPS

This Digital Strategy document is a current snapshot of a multi-year, multi-phased transformation of how the City of Richmond will connect with its customers. The Digital Strategy Committee has established a timeline for the roll out of the various components of the Digital Strategy, some of which have already been launched.

In 2014, the City launched its new Mobile App, which is available for iPhone and Android devices. This App was developed due to the successful implementation of a layer of technology (a predecessor to the Digital Nervous Ecosystem) that connects the Events database with the Community Services database and the registration system for both the City of Richmond and the Richmond Oval. The App to date has been extensively downloaded and overall feedback has been extremely positive.

2015 AND BEYOND

The next focus of the Digital Strategy will be to create a mobile-enabled version of our Public Works system and the creation of the Digital Nervous Ecosystem technology layer. Once these are established, and the City has an improved ability to understand our customers, we will be relaunching the City of Richmond website. This new website will provide our citizens with a highly customizable, interactive user inter-face that seamlessly connects user information to provide the citizens of Richmond with a customer-centric experience on the website.

The efforts to successfully deliver the City of Richmond Digital Strategy cannot be done in isolation by Information Technology alone. To date, the cross-functional Steering Committee has helped to ensure the project is a city-wide initiative and this continued engagement across divisions is key to the project's ultimate success.
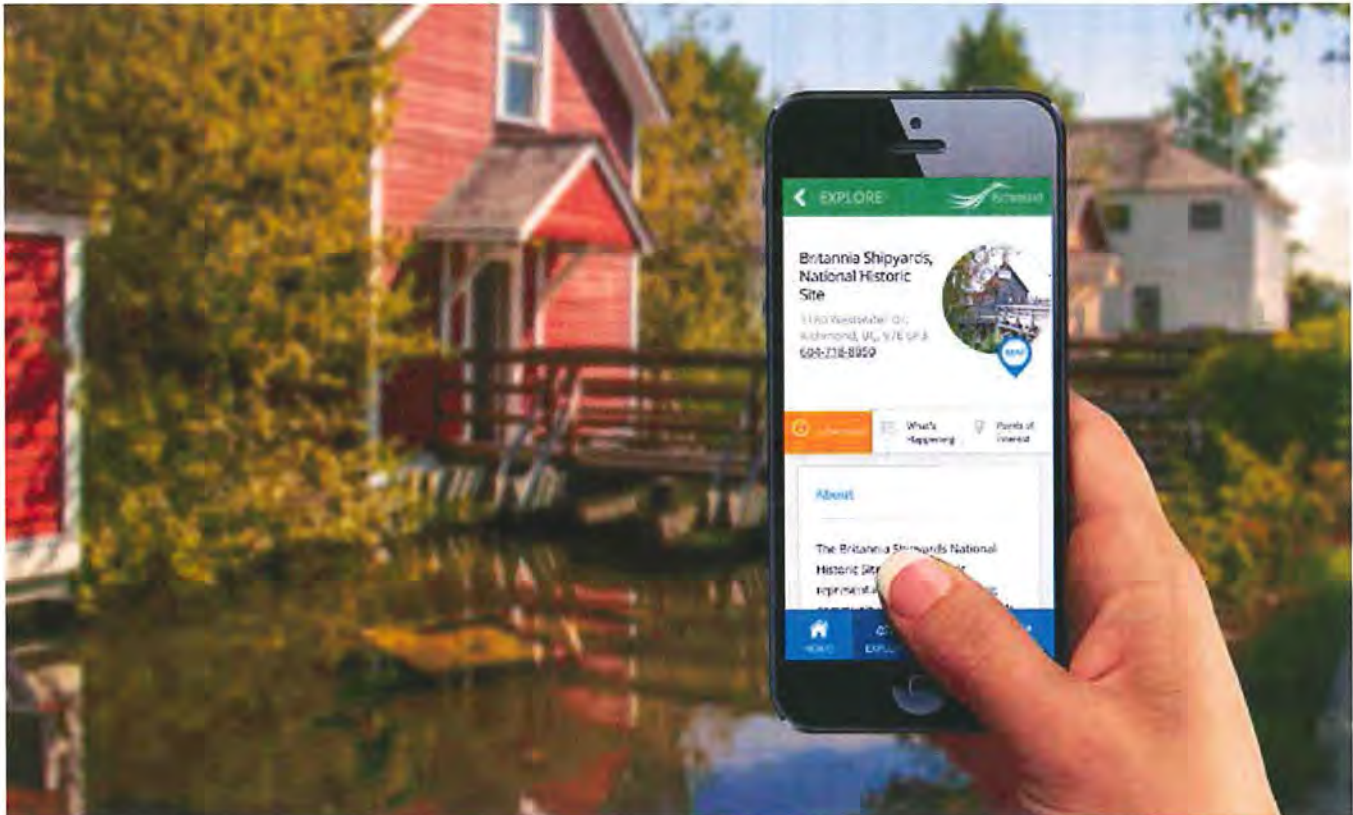
CONCLUSION

This document has provided an overview of how the City of Richmond is leveraging today's digital technologies to transform its current customer service approach from service-centric to customer-centric. It has demonstrated how by introducing a connecting layer of technology to bring together all the multiple systems already in place at the City, the City can improve its customer service, become a more efficient and effective organization, create more engaged employees and citizens, and instil a customer-centric culture throughout all departments and at all levels.

The Digital Strategy is clearly aligned with the City of Richmond's vision of being "the most appealing, liveable, and well-managed community in Canada."

With the support of City Council, the CAO, the Senior Management Team and the employees of the City of Richmond, this Digital Strategy will move the City of Richmond to the forefront of innovation for municipal government across North America.

Att. 2: List of locations with fibre and Wi-Fi service completed

Site / Location	Fibre Connected	Wi-Fi Enabled	Service Active
Britannia Shipyards, National Historic Site	Yes	Yes	2016
City Centre Community Centre	Yes	Yes	2015
City Hall	Yes	Yes	2014
City Hall Annex	Yes	Yes	2015
City Works Yard	Yes	Yes	2014
Firehall #2	Yes	Yes	2015
Firehall #4	Yes	Yes	2015
Firehall #6	Yes	Yes	2015
Firehall #7	Yes	Yes	2015
Minoru Arena	Yes	Yes	2015
Richmond Art Gallery	Yes	Yes	2015
Richmond Art Centre	Yes	Yes	2015
Richmond Media Lab	Yes	Yes	2015
Richmond Museum	Yes	Yes	2015
Richmond Nature Park	Yes	Yes	2016
Richmond Olympic Oval	Yes	Yes	2015
Sea Island Community Centre	Yes	Yes	2015
South Arm Community Centre	Yes	Yes	2015
South Arm Outdoor Pool	Yes	Yes	2015
Steveston Community Centre	Yes	Yes	2014
Steveston Outdoor Pool	Yes	Yes	2016
Thompson Community Centre	Yes	Yes	2015
West Richmond Community Centre	Yes	Yes	2015

Att. 3: List of locations with fibre and Wi-Fi service to be completed

Site / Location	Fibre Connected	Wi-Fi Enabled	Service Active
Cambie Community Centre	Yes	No	Oct 3, 2016
East Richmond Community Hall	Yes	No	Sep 28, 2016
Hamilton Community Centre	No	No	Sep 28, 2016
Hugh Boyd Park	No	No	Sep 30, 2016
King George / Cambie Community Park	No	No	Sep 30, 2016
Lang Centre	No	No	Dec 21, 2016
Minoru Park	Yes	No	Sep 30, 2016
Richmond Ice Centre	Yes	No	Oct 11, 2016
South Arm Park	No	No	Oct 6, 2016
Steveston Martial Arts Centre	Yes	No	Sep 28, 2016
Steveston Japanese Cultural Centre	Yes	No	Sep 28, 2016
Steveston Museum	Yes	No	Feb 27, 2017
Steveston Park	Yes	No	Sep 27, 2016
Watermania	Yes	No	Oct 11, 2016

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