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**REPORT TO:** Finance and Corporate Services Committee

**DATE OF MEETING:** November 8<sup>th</sup>, 2021

**SUBMITTED BY:** Murray, Dan, Director Technology Innovation and Services, 519-741-2200 ext. 7825

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**WARD(S) INVOLVED:** All

**DATE OF REPORT:** October 25, 2021

**REPORT NO.:** COR-2021-28

**SUBJECT:** Digital Kitchener and Innovation Lab Update

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## **RECOMMENDATION:**

That report COR-2021-28 - Digital Kitchener and Innovation Lab Update be received for information.

## **REPORT HIGHLIGHTS:**

- The purpose of this report is to provide an update on progress of the Digital Kitchener strategy
- The key finding of this report is that the COVID-19 pandemic has driven rapid digital transformation of City of Kitchener processes and services
- There are no financial implications as a result of this report
- Community engagement included inform, consult and collaborate as appropriate for each of the initiatives outlined in the report.
- This report supports the delivery of core services.

## **BACKGROUND:**

In 2017, the Digital Kitchener strategy was launched, demonstrating the city's commitment to creating a world-class smart city. Investing in digital technologies and processes that would revolutionize the way we do business, and how citizens live, work and play in our community. We've come a long way in five short years. This report will highlight some of the most recent achievements toward building a city that is connected, innovative, on-demand

and inclusive. Kitchener is recognized, within Canada and internationally for its achievements in the smart city space.

The impact of the global pandemic over the past two years has catalyzed many digital transformations, compelling staff and the community to adapt to digital services at a rate we have never experienced before. The investments in technology made in years prior to the pandemic positioned the City of Kitchener to respond to this increased demand for digital transformation.

The Digital Kitchener Innovation Lab has been a cornerstone of the Digital Kitchener strategy, providing us with presence in the local technology community, engagement with local higher education institutions and promoting innovative practices within our municipality. The Lab has been operationalized within Technology Innovation and Services and has delivered significant projects of interest through design thinking, rapid prototyping of new ideas and exploration of new technologies like machine learning and augmented reality.

## **REPORT:**

### Update on Digital Kitchener

Since the Digital Kitchener strategy was endorsed by Council in January 2017, the city has taken bold steps to elevate the use of digital technology to enhance the city's operations and to improve services to residents. Digital Kitchener identified four theme areas: Connected, Innovative, On-Demand and Inclusive. The intent was to identify 4-5 projects each year that would be advanced to move Digital Kitchener forward. These strategic projects were referred to in our annual Brave Plan. Before staff were able to return in 2020 for an update to committee, the COVID-19 pandemic disrupted our normal cadence of updates. Staff efforts were shifted to respond to the evolving needs driven by the pandemic and deploying new technology to advance digital services where our traditional service models were no longer possible. The work completed over the course of 2020 and 2021 have introduced the most significant digital transformations the city has experienced. The rate of change was driven by the need to quickly adapt and city staff have adopted new technology, processes and ways of looking at service delivery swiftly. As a result, we have made significant progress in all themes of Digital Kitchener.

**A Microsoft Sway interactive presentation can be viewed at [this link](#) highlighting many of the below Digital Kitchener achievements.**

**Connected:** building smarter infrastructure to become a more competitive, more productive and more attractive place to live and work.

- **Resilience** became a critical factor in continuing to deliver services through the pandemic. With the elevated reliance on the City's network infrastructure to connect staff to the workplace, facilitate virtual meetings and deliver services digitally, there was need to ramp up our capacity. Internet services were bolstered and contracts renegotiated to remove usage limits, VPN infrastructure deployed and leveraged and our Citrix remote application environment was increased to handle the additional load. We quickly rolled out Microsoft Teams and Zoom capabilities to ensure that staff could easily pivot to virtual meetings.

- **Cloud technology** was on the technology roadmap and we had begun the planning for deployment. We leveraged our existing plans while shortening our deployment schedule bringing Microsoft Azure Active Directory, Multi Factor Authentication and Microsoft Office365 to city staff quickly to respond to the growing needs. We replaced our aging email infrastructure with cloud-based Microsoft Exchange services, increasing our email capacity and availability significantly.
- The exploration of **Internet of Things** has continued. In a collaboration with Eleven-X and GHD, we connected several of our passive stormwater monitoring systems to be able to get real-time data from the system. Another collaboration with Wilfrid Laurier University and Hemmera saw the deployment of five air quality monitoring systems across Kitchener around schools to monitor the impact of vehicles idling around schools on air quality. A data dashboard and open data set have made this data available to all those in community who wish to use. Work has also continued on wayfinding applications, people and dog counting for dog parks and soil moisture sensors.
- **Telecom and wireless network infrastructure** in our community has also been improved. The telecommunications tower at Fire Station 7 on Huron Road has been built and will be put into service improving cellular and Internet service for those in the Rosenberg, Trussler and South Plains neighbourhoods. A new tower is planned for Sportsworld Arena this year which will improve services in Sportsworld, Pioneer Tower West and East neighborhoods. Another is planned for the Alpine neighborhood which will improve service to all surrounding neighborhoods. Our network infrastructure was also built out to extend public Wi-Fi to a number of new locations.

**Innovative:** inspiring a community of creative minds to drive change that has meaningful impact

- After a successful 3 year pilot, in January 2021, the **Innovation Lab** was operationalized as part of Technology Innovation & Services, further embedding innovation as our standard operating procedure. The lab supports innovation throughout the city through design thinking, rapid prototyping and exploring emerging technologies and potential application within the city.
- The Innovation Lab is supporting innovation in planning engagement through 3D printing of key development areas including downtown. **3D printed models** have been printed and an **Augmented Reality** application has been developed with the potential to help visualize future possibilities.
- Throughout the summer, 360 degree panoramic images were captured along trails across the city. These images are being published to **Google Street View**, making them available to the public to discover new trails and routes and to staff to assist in work planning.
- Through prototypes and pilots, we're getting hands on with emerging technologies such as **machine learning and artificial intelligence** to robotically inspect

sidewalks, sort large libraries of images and derive new insights from the wealth of city data.

- The collaborative **Technology Solution Assessment** process engages technology, privacy, procurement and legal resources to evaluate new technology projects in their early stages to identify risks and mitigation strategies, ensuring the city has a thorough understanding of new technologies and has gathered the appropriate information for a successful implementation and adoption.

**On Demand:** enhancing access to open data and online services

- Launched in March 2021, **MyKitchener** brings together a refreshed website content and enhanced search experience, and introduced a centralized online services portal. This transformation was driven by citizens and their feedback in the 2018 Customer Service review, and delivered through collaboration between staff in technology, customer service and communications roles, and direct engagement with citizens to define the user experience and prioritize features. The MyKitchener platform continues to evolve, offering new content and functionality and delivering a high quality online experience to citizens.
- Building on the power of SAP, we're deploying enhancements with customer impact. **Online tax deferrals and certificates** offer convenience and efficient processing.
- **Online forms and bookings** connect citizens with city services, enabling convenient, on-demand access to apply to programs, make requests and schedule appointments 24/7, and have become a crucial tool in enabling the continuity of business during the pandemic.
- Robust, secure and convenient payment options are a must-have for customers. **Online payment options** are now available for property taxes, utilities and financial services invoices with additional services currently being added.
- Streamlining our response to critical events, the **Water Main Break App** puts information at our fingertips, enabling improved coordination and communication.
- The **Make Tracks** app was developed to provide residents with a pandemic safe activity to get out and learn more about the landmarks around each of our Community Centres. This app was honoured with ESRI's App of the Month award in June 2021 for its innovative use of ESRI technology.
- Showcasing the City's Corporate Climate Action Plan, the **Climate Action Storymap** demonstrates the critical need for climate action and projects the city is undertaking to improve sustainability. The storymap was featured as part of THEMUSEUM's ALARM exhibit in 2020.
- Originally launched through the regional Alert Waterloo Region program, the **Everbridge** system enables automated communications to phone, text, and email. At the onset of the pandemic, staff recognized the opportunity to leverage this

technology to reach employees who had been directed to shelter at home or placed on emergency leaves. This technology enabled rapid communication to all available contact information for staff, saving 50+ hours of communications effort and allowing the emergency operations center to coordinate on pandemic response.

- The adoption of online expense management and digital signatures has improved the effectiveness of many of our internal processes and the delivery of customer service. **Concur** allows for easy tracking of staff expenses and approvals, eliminating a paper laden process and streamlining financial reconciliation. The **digital signature platform** has enabled more effective processing of grant and funding agreements, cemeteries contracts, performer and vendor contracts, and employment agreements especially during the pandemic.
- The **Clevest work management system** puts all the information needed in the hands of the on-site technician so they can deliver timely, efficient service to our Kitchener Utilities customers. The solution is also helping streamline operations, recording field work in real-time and eliminating paperwork backlogs. This project was recognized by MISA Ontario in 2021 with an Excellence in Municipal Systems Award.
- The pandemic forced us to look for new ways to work collaboratively. Leveraging our investment in **Microsoft Office365**, many processes were redeveloped to use MS Teams and SharePoint allowing real-time collaboration on documents, presentations, and spreadsheets. This platform allowed us to collect data from across the organization, build reports and disseminate information easily to support decision making throughout the pandemic.

**Inclusive:** improve digital literacy and access so that Kitchener can be a community where no citizen is left behind

- **Free outdoor public Wi-Fi** was added to several downtown locations and community centres to respond to the need to provide easier access to the service during the pandemic. Wi-Fi was installed downtown including along King Street, around Kitchener City Hall, Vogelsang Green and in Goudies Lane. Free public outdoor Wi-Fi was also installed at Centreville Chicopee and Chandler Mowatt community centres. The success of the outdoor Wi-Fi service has led to plans to add this to other community centres.
- **Public access computers** were deemed a critical service during the pandemic, ensuring members of our community have access to internet connected devices during a time when services, shopping, and social connection shifted abruptly to a digital mode. Computers are offered by pre-booked appointment, with some capacity reserved for first-come first-served access. This service has been offered at seven community centres, prioritizing areas of greatest need. Computer access compliments other critical services on site, such as food distribution and vaccination clinics.
- **Kitchener Tech Connects** supports digital access and literacy of older adults through the provision of a digital device lending library and free training focused on developing essential technology skills. These technology skills were critical before

the COVID-19 pandemic. However, this crisis has highlighted the urgent need to provide older adults with digital access and training to support not only social connections but also their ability to access essential services and support. This program was delivered through the Older Adult Services team with support from Technology Innovation & Services to procure devices and develop device reservation and course registration solutions.

- City staff also hosted **Cyber Security Awareness sessions** for senior groups that had been forced to quickly adopt technology to remain connected with loved ones. These sessions helped the seniors to benefit from the technology without increasing the risk of falling prey to the many cyber security concerns that target unsuspecting end users.

### Digital Kitchener Innovation Lab Update

In December 2020, a renewed vision for the Innovation Lab was presented to committee which would align the work of the lab to the city's strategic priorities and big challenges, focusing deliverables around three key services:

- **Design Sprints** - Using a design-sprint model, the Lab leads teams through a rapid-fire approach to problem solving, guiding an idea from problem definition to prototyping and user testing before pitching a solution for implementation.
- **Rapid Prototyping** - Making an idea tangible with very little investment can help build understanding of the potential benefits and unexpected impacts of new technologies on customer experience and business processes. Prototypes can take many forms and offer opportunities to experiment with multiple options, gather feedback and understand the scope of an initiative early-on when the effort to pivot or make changes is low.
- **Technology Exploration** - Demonstrating emerging technologies can help identify use cases, envision future possibilities, and test user interest before committing to larger scale investments.

To ensure strategic alignment of the workplan and enable flexible staffing plans, regular updates and collaboration with the Corporate Leadership Team (CLT) on the lab's workplan are taking place throughout each year. Accomplishments of the lab up to December 2020 were shared previously with committee. Accomplishments from 2021 are highlighted below.

### **Design Sprints**

- **Citizen Dashboard Design Sprint** - In collaboration with the CAO's office, Communications and Compass Kitchener we explored the potential for a citizen dashboard and prototyped ideas of what might be included.
- **Design Thinking Training** – promoting the power of design thinking and building internal capacity, the lab delivered internal CapaCITY training courses:
  - Customer Journey Mapping - introducing tools to help staff explore customer experiences and identify opportunities for improvement.
  - Test your ideas - focusing on prototypes, pilots, and how to test new ideas and gather feedback.

## Rapid Prototyping

- **City Data Patterns** project exploration. Combining multiple city datasets and applying machine learning techniques, models were created around air quality (considering weather, traffic counts and tree canopy) and traffic calming aligned to the existing request evaluation criteria. Both projects resulted in predictive classification models based on relationships within the datasets. Additional feature generation, engineering and visualizations were developed to further explore, validate and understand the model results.

## Technology Exploration

- **3D Printing of Downtown and Block Line Station PARTS areas** - Over 8 months in 2021, we 3D printed buildings across a significant area of downtown and the PARTS area around the Block Line LRT Station. In addition to printing the buildings in these areas, we have printed our own building blocks that can be used to help visualize new possibilities in development areas and how buildings of different heights and configurations may fit into the broader neighbourhood context.
- Through the **Safe x Connected Accelerator program, sponsored by Aviva Canada**, we have worked with Numina to pilot 10 devices to monitor the flow of vehicles, cyclists and pedestrians along the identified slow streets at no cost to the city. The output data includes counts, pathways and dwell times. The devices were installed at the end of July and will remain until the end of October. As the slow streets initiative was created in response to the pandemic, the data collected will help inform whether the initiative continues.
- The Lab, in collaboration with Parks and Cemeteries, deployed a student on an etrike to capture 360 degree panoramic images of the winter-maintained multi-use trails across the city. We captured over 7000 images across over 40 kilometres of trail, while travelling close to 500km. These images are being connected and published to **Google Street View**, offering easy access to the public to discover new trails within the community and to staff for work planning purposes. Highlighted by multiple local media sources, this project has been very well received, with Google indicating close to 40 000 views of our images. We intend to continue to build upon this content, with plans to capture additional trails, community pathways and parks and refresh the content as amenities are renovated.

**Ongoing Pandemic Response** - The lab has also continued to serve as a resource to rapidly respond to new needs driven by the pandemic, including both data projects and technology research such as:

- Workforce status and work from home reporting
- Technology research to support new and evolving needs such as people counting and centralized customer service.

## Ongoing Communitesh Partnership

Earlier this year, a renewed partnership with Communitesh has ensured that the Digital Kitchener Innovation Lab will continue to have access to the lab space at Communitesh and

ongoing interactions with technology ecosystem and programs offered at the Communitech Hub for the next five years. As the pandemic related health restrictions lift, we look forward to being able to fully engage in the technology ecosystem that Communitech offers us.

### Looking Forward

Digital Kitchener was envisioned as a 5 year digital strategy when it was launched. While the arrival of the COVID-19 pandemic has impacted the ability to formalize annual work plans, an agile, responsive approach has been utilized to continue to advance the strategic objectives. The themes of Digital Kitchener have endured and remain relevant as we begin to emerge from the pandemic. We will continue to leverage this agile approach while we respond to the emerging needs post-pandemic.

When both the community and workplace environments have stabilized post-pandemic and we can begin to engage fully with stakeholders, we will look to update and modernize Digital Kitchener for the next five years.

### **STRATEGIC PLAN ALIGNMENT:**

This report supports the delivery of core services.

### **FINANCIAL IMPLICATIONS:**

This report has no financial implications

### **COMMUNITY ENGAGEMENT:**

INFORM – This report has been posted to the City's website with the agenda in advance of the council / committee meeting.

CONSULT – The Digital Kitchener strategy was approved in January 2017 after extensive consultation with stakeholders

COLLABORATE – Digital Kitchener's initiatives are developed in collaboration with various internal and external partners.

### **PREVIOUS REPORTS/AUTHORITIES:**

- FCS-017-002 – Digital Kitchener Strategy
- FCS-017-006 – Digital Kitchener – Civic Innovation Lab
- FCS-18-009 – Digital Kitchener 2017-2018 Update
- COR-19-017 – Digital Kitchener 2019 Update
- COR-20-019 – Digital Kitchener Innovation Lab Update

**APPROVED BY:** Victoria Raab, General Manager of Corporate Services