# Staff Report

*Corporate Services Department* *www.kitchener.ca*

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| **REPORT TO:** | **Special Council** |
| **DATE OF MEETING:** | **February 12, 2024** |
| **SUBMITTED BY:** | **Dan Murray, Director, Technology Innovation & Services, 519-741-2200 ext. 7825** |
| **PREPARED BY:** | **Courtney Zinn, Lab Director/Technology Strategist, Technology Innovation & Services, 519-741-2200 ext. 7034** |
| **WARD(S) INVOLVED:** | **All Ward(s)** |
| **DATE OF REPORT:** | **October 16, 2023** |
| **REPORT NO.:** | **COR-2024-068** |
| **SUBJECT:** | **Digital Kitchener Innovation Lab exploration of Artificial Intelligence** |

## RECOMMENDATION:
**For discussion**

## REPORT HIGHLIGHTS:

- The purpose of this report is to provide Council with a Strategic Session update on the exploration and use of artificial intelligence within the Digital Kitchener Innovation Lab and considerations for broader use within the city. Staff will engage Council in three broad questions following the update from staff and presentation by Jimmy Lin, Cheriton Chair in the School of Computer Science, University of Waterloo and Co-director of the Waterloo AI Institute
- The key finding of this report is the use of artificial intelligence is expected to become more pervasive and the city should continue to take steps to ensure responsible adoption of these tools.
- There are no financial implications.
- This report has been posted to the City's website with the agenda in advance of the council / committee meeting
- This report supports Stewarding a Better City Together: Focuses on City employees as stewards of Kitchener; responsive, innovative, diverse & accountable public servants working together to serve residents; removing barriers and championing a better city and a better world.

## BACKGROUND:

Through the Digital Kitchener strategy, the city has committed to building a city that is inclusive, on-demand, connected and innovative. Investments in modern technology and partnerships within our local technology ecosystem support and strengthen our ability to efficiently deliver services to residents and meet their expectations in an increasingly technology-centric world.

The Digital Kitchener Innovation Lab supports our drive for innovation by focusing on exploring emerging technologies and how they might be applied in the municipal context. While some of the technologies explored may not be fully adopted for years to come, staff can learn a lot about how new approaches and technologies being developed today could change how the city delivers services in the future. Through experimentation and prototyping, staff envision future possibilities and understand the opportunities and potential risks new technologies could bring. These lessons inform our approach to technology adoption and provide insights for how staff might prepare for the future.

Looking toward a refresh of the Digital Kitchener strategy, staff are considering the most pressing technology issues for our community. Artificial Intelligence (AI), specifically generative AI (AI able to create new content), is rapidly evolving and quickly becoming more accessible and integrated into many popular office technologies and customer experience applications.

At Council's strategic session on February 12th, Council will receive a presentation on considerations for the adoption of AI from Jimmy Lin, Cheriton Chair in the School of Computer Science, University of Waterloo and Co-director of the Waterloo AI Institute. Following the presentation, staff will share their work of the Digital Kitchener Innovation Lab in exploring and developing AI driven tools for city use cases and facilitate a discussion of potential use cases, risks, applicability, and deployment of these technologies in the municipal context. The session will be held at the Communitech Hub.

**REPORT:**

**Artificial Intelligence and the rapid rise of generative AI**

AI refers to machines and software that exhibit intelligence, such as learning, reasoning, planning, problem-solving, predicting, and the use of language and vision.[1] With the advent of big data (large, complex data sets), and driven by the explosion of computing capacity and speed, AI tools are being increasingly integrated into technological solutions that are central to our everyday life, business, society, and the environment.[2]

Recently, large language and generative models (e.g. ChatGPT), trained on vast, historical data sets to understand patterns in language, images and audio, have become prevalent and more easily accessible, advancing adoption by the general population and accelerating the need for discussion and guidelines for how AI might be adopted responsibly.

**Risk assessment and guidelines**

The capabilities of AI models are quickly evolving, offering exciting possibilities while also presenting risks and a multitude of considerations for their responsible adoption.

All levels of government have begun grappling with these risks through principles and frameworks to guide their adoption into the public sector. Within the city, staff are considering these guidelines and their integration into our existing processes and procedures for evaluating and adopting new technologies.

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[1] https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-ai

[2] https://uwaterloo.ca/artificial-intelligence-institute/

Critical risks include:

- **Data management, security and privacy** – like any technology the city adopts, it is critical that staff understand how data is handled and secured throughout its lifecycle.
- **Identification of biases** – as models are trained on historical data, any bias found in the training data may also be found in the models generated and their outputs which may perpetuate harmful views or stereotypes.
- **Accuracy and reliability** – AI models may vary in their ability to provide accurate and reliable results depending on how they were trained and implemented. Understanding the capabilities and limitations of models and their use cases is critical to using AI tools effectively.

**Future possibilities and challenges**

Through the Digital Kitchener Innovation Lab, staff have experimented with a variety of AI tools toward municipal applications including augmenting customer service through chat features that help residents and customers more readily connect with the information they're looking for. Integration of AI with technologies like Augmented Reality to offer on-demand information about city facilities or amenities from their mobile devices and leveraging multi-lingual support to assist residents in navigating city signs and notices.

In addition to customer experience, AI also offers potential to create efficiencies by proactively identifying issues or modelling scenarios at a broader scale than our existing resources might allow. Through our exploration, staff have also been testing approaches that could help in addressing some of the identified risks to help ensure consistent, reliable and transparent experiences. These approaches include limiting the scope of responses to content contained within city websites and documents, citing references (such as policies or bylaws) in responses and including links to the source for further information and context.

**Discussion questions for Council:**

- **What opportunities do you foresee for the use of AI at the city?**
- **What concerns do you have about the adoption of AI within city operations?**
- **What do you see as the biggest barriers to the city's adoption of artificial intelligence?**

## STRATEGIC PLAN ALIGNMENT:

Stewarding a Better City Together: Focuses on City employees as stewards of Kitchener; responsive, innovative, diverse & accountable public servants working together to serve residents; removing barriers and championing a better city and a better world.

## FINANCIAL IMPLICATIONS:

Capital Budget – The recommendation has no impact on the Capital Budget.

Operating Budget – The recommendation has no impact on the Operating Budget.

**COMMUNITY ENGAGEMENT:**

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

CONSULT – Through the upcoming refresh of the Digital Kitchener strategy, an engagement plan will be developed including considerations for the use of artificial intelligence and the broader deployment of technology.

**PREVIOUS REPORTS/AUTHORITIES:**

There are no previous reports/authorities related to this matter.

**APPROVED BY:** Dan Chapman, Chief Administrative Officer

**ATTACHMENTS:**

No attachments