



Artificial Intelligence in Manitoba

Strategic Roadmap for 2023-2026



What is Artificial Intelligence?

In its simplest form, Artificial Intelligence is the simulation of human intelligence processes by machines, in particular computer software. Sub-fields within AI include: machine learning, using algorithms to process large amounts of data quickly, and deep learning, using artificial neural networks for more complex, non-linear reasoning. Today, AI plays an often invisible role in everyday life, powering search engines, product recommendations, speech recognition systems and cybersecurity.

Vision

A strong and cohesive ecosystem in Manitoba that supports research and development in AI, connecting machines, people and infrastructure to influence product and process performance for our collective success and well-being. Manitoba is recognized as a global leader in AI.

Mission

To collaborate as a diverse, creative and focused network of people and resources so we can all realize the benefits of artificial intelligence in delivering efficiency, productivity and growth for the province of Manitoba.

Artificial Intelligence in Manitoba and Canada

Recent advancements in digital technology and machine learning has led to rapid growth in the use of data science and technical solutions for businesses across all economic sectors. In turn, there is a great demand for employees with understanding and applied knowledge in artificial intelligence. Ensuring that there is a sufficient talent pipeline to support the continued growth of our diverse industry sectors is part of ensuring a strong economy in Manitoba.

As a country, Canada is considered a leader in AI.

- In 2017, the Government of Canada awarded \$125 million in initial investments to CIFAR to create and implement phase one of the Pan-Canadian Artificial Intelligence Strategy, the world's first national strategy.
- A second phase was announced in June 2022 for \$443 million in federal support over ten years for AI, to CIFAR and three national AI institutes based in Edmonton, Montreal and Toronto.
- Canada's ecosystem includes more than 800 AI companies and 670 AI start-ups.
- Canada ranked 44th (out of 54 countries) in the 2022 Global AI Index for its global competitiveness in AI.



In Manitoba, AI and related fields present an emerging and important opportunity. There are exciting technological advances happening across our diverse and dynamic economy. Advanced Manufacturing, Aerospace, Agriculture and Agribusiness, Information and Communication Technology, and Health Care and Biotechnology can all celebrate novel intelligent technologies which enable their continued success. Now is the time to leverage the passion of stakeholders to build a coordinated approach for Manitoba and accelerate AI growth and innovation in our province. Aligning our efforts can ensure better access to funding and generate greater results across all our industries.

Artificial Intelligence in Manitoba: An Untapped Opportunity

“Hey, Siri where’s the closest gas station to me?”

Technology has a way of sneaking into our lives and altering our expectations of how we do things. When first using a new function like a virtual assistant, such as Siri or Alexa, we can quickly see how much easier it may be to ask a device where we can find something compared to typing in a search word or needing to know a website’s address.

Artificial intelligence, or AI, is essentially the ability for a machine to be programmed to help us solve a task, which is beneficial to us. It’s ushering in a new era of efficiencies and productivity, which will impact every industry and sector around the world.

It can already be found in everyday uses most of us are familiar with like shopping online, unlocking our phones through facial recognition, having movies and TV series recommended for us based on our viewing history, and providing navigation help while we drive. Industrial uses also include smart-grid management of power infrastructure, traffic and transportation management, robotics, and automation.

Organizations that identify a plan of how AI can benefit them, and successfully implement that plan, will gain competitive advantages that are critical for economic resiliency in a world of rapidly changing uncertainties. Manitoba needs to be intentional about how best to harness the expected benefits of AI, so our industries, our people, and our province can gain an advantage by building, adopting, and selling services, products and experiences that harness this technology.

The World Economic Forum’s Future of Jobs Report estimated 85 million jobs will be displaced by 2025, because of the transition underway between people and technology. However, 97 million new roles will emerge during this time, roles that require people adept with using data, coding, and the ability to analyze and translate business requirements into technology options.

Given the benefits AI is expected to offer companies and organizations who adopt them, there is already an unmet need for people who understand how to work with AI. Recruitment and retention of this highly sought-after talent pool means organizations wishing to gain the benefits from AI will need a steady and sustainable source of talent. They also need to look at how to build capacity amongst their existing team, to future-proof their skills.

Manitoba already has a competitive and economic advantage in the diversification of our sectors, now is the time to work towards a not-so-distant future where AI will help our industries grow those advantages.

Examples of Artificial Intelligence used by Manitoba innovators



TRAINFO is dedicated to understanding and preventing traffic delays at rail crossings. It provides the tools and information that government agencies need to ensure seamless mobility for motorists, reduce delays for emergency responders, and mitigate collisions between vehicles and trains. TRAINFO's proprietary sensors collect information at railway crossings, and using a patented process involving machine-learning algorithms and artificial intelligence, they are able to predict rail crossing blockages up to 30 minutes before a train arrives. They then deliver this information through an advanced traffic management system, roadside signs, and emergency dispatch software.

Wawanesa Insurance is building on its proud history by leveraging artificial intelligence and machine learning to provide excellent products and service to customers. For example, Wawanesa uses machine learning to help lower premiums by reducing unnecessary administrative costs. A predictive model is used to determine if a Motor Vehicle Record (MVR) report should be ordered for any given driver at policy renewal time. Machine learning helps to identify when MVRs should be requested, helping to ensure an appropriate and fair premium, while minimizing the overall cost of MVR reports.



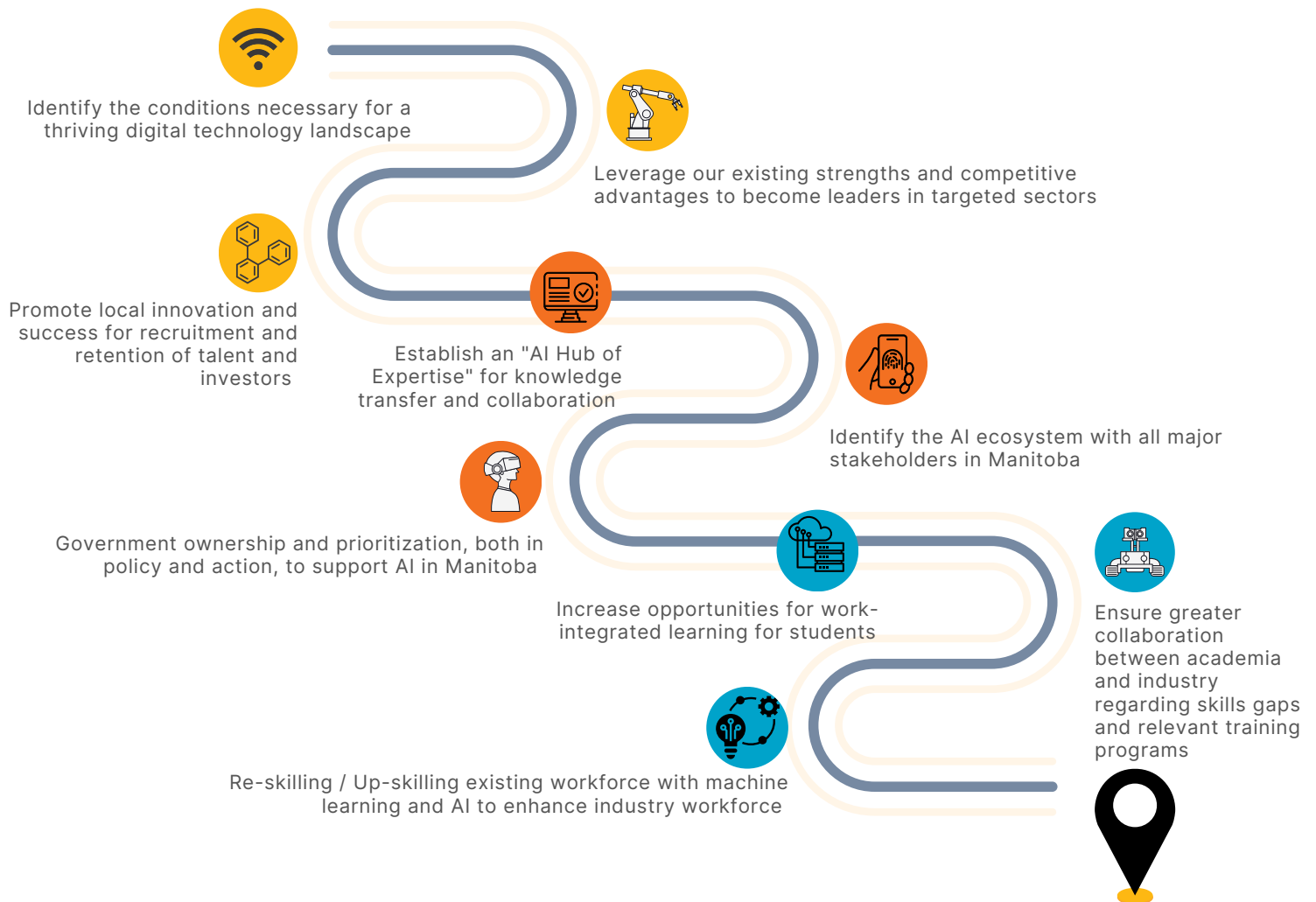
TheoryMesh provides software solutions to help digitize and optimize the food supply chain. Their current platform includes the digitization of scanned paper documents and process optimization. For the agriculture and food industry, most of the information exchanged between firms is on paper. TheoryMesh's software uses AI to determine the information contained in newly scanned documents and then is continuously trained to improve data capture from these documents. Their process optimization software allows companies to create multi-step processes and will then use AI to provide analysis and predictive analytics on how to get the best output. For food companies this may include tweaking parameters in a complex extraction process or better controlling the characteristics of an input grain.



Strategic Priorities

- Establish a clear digital identity for Manitoba, which highlights AI, to foster the conditions necessary for businesses and people to thrive
- Drive shared outcomes through the collaboration between industry, academia, and government
- Increase integrated skills development and relevant training to enhance career opportunities

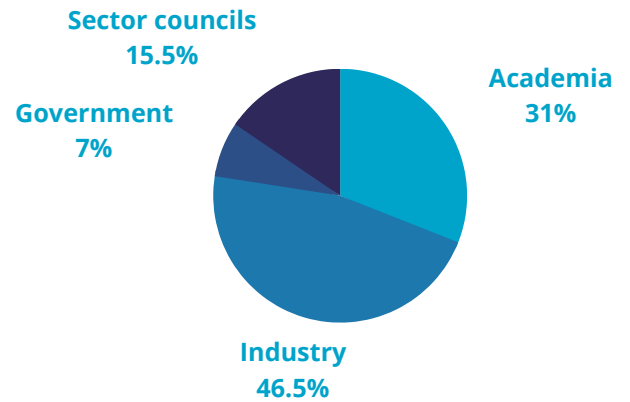
Roadmap Timeline



Strategic Planning

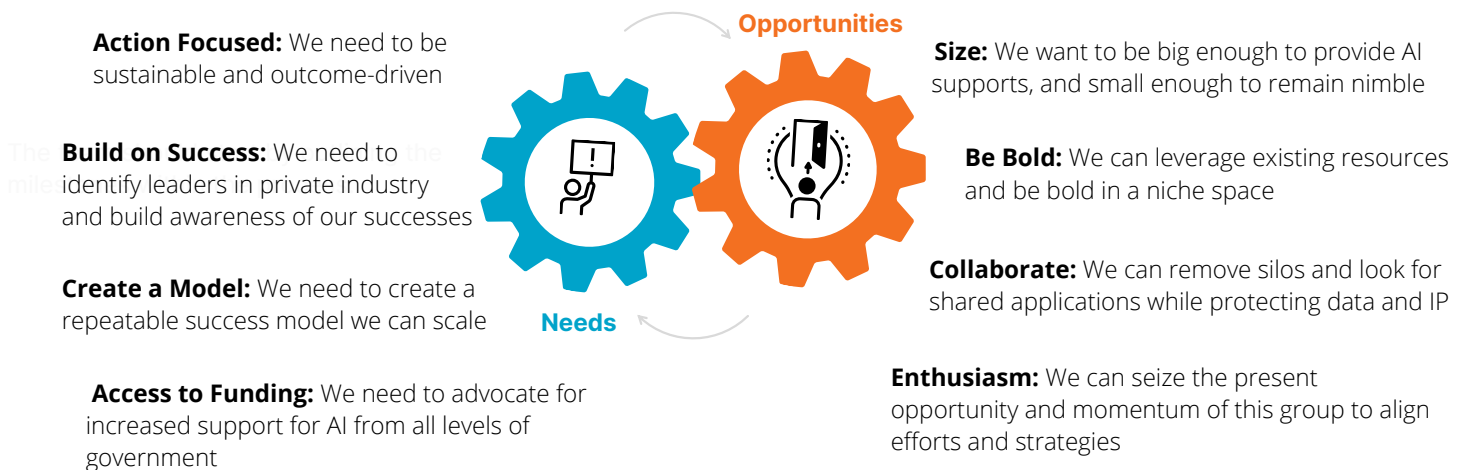
On May 19, 2022, the Manitoba Industry-Academia Partnership, with Tech Manitoba and Economic Development Winnipeg, brought together a diverse group of stakeholders for collaborative conversations around Artificial Intelligence. Facilitated by InVision Edge, 50 people came together to address current challenges, share strategies, and increase collaboration between industry and academia to drive innovation.

Conversations continued at a full-day strategic planning session on June 28th. During this session, information gathered in group discussions was leveraged to align on a vision and three main strategic priorities to move AI forward towards an exciting future state over the next 3 years.



from roundtable and strategic planning sessions

Identifying needs and opportunities:



Strategic Priorities and Goals

Strategic Priority #1: Establish a clear digital identity for Manitoba, which highlights AI, to foster the conditions necessary for businesses and people to thrive

Goal 1: Identify the conditions necessary for a thriving digital technology landscape

Outcome: Manitoba companies are leaders per capita in ITC funding and investment

Outcome: Industry and public awareness of the benefits of adopting digital technology

Outcome: Growth in the tech sector, including growth in local companies, with more people employed in tech and increased external investment in Manitoba companies

Goal 2: Leverage our existing strengths and competitive advantages to become leaders in targeted sectors

Outcome: Successes in Agriculture are used as a model to replicate in other key sectors

Outcome: Manitoba companies and academia are seen as respected leaders in pure and applied AI

Outcome: The tech sector is effecting positive change in Manitoba and communicating its impact to Manitobans

Goal 3: Promote local innovation and success for recruitment and retention of talent and investors

Outcome: Events that engage students and industry, such as "Summer of AI", hackathons, networking mixers

Outcome: A sustainable funding stream for innovation in digital technology

Outcome: Made-in-Manitoba AI is recognized as built on equity, diversity and inclusion, leveraging the strength of our local ecosystem

Strategic Priority #2: Drive shared outcomes through the collaboration between industry, academia and government

Goal 1: Establish an "AI Hub of Expertise" for knowledge transfer and collaboration

Outcome: The AI Hub of Expertise will be a magnet for global collaborations, a gravitation centre pulling together talent, investment, and companies from other jurisdictions

Outcome: Manitoba is an AI start-up, with a culture that embraces innovation, experimentation, and is not afraid to fail.

Outcome: Manitoba is leading Canada in the highest number of jobs in AI and the highest number of graduates in AI.

Goal 2: Identify the AI ecosystem with all the major stakeholders in Manitoba

Outcome: A (single source) directory for locating resources within Manitoba's tech sector.

Outcome: Clear and accessible pathways for new AI participants

Goal 3: Government ownership and prioritization, both in policy and action, to support AI in Manitoba

Outcome: Increase pre-seed funding and support for entrepreneurs

Outcome: Manitoba is a leader in Math and Science in K-12 foundational skills development

Outcome: Expanded ministerial accountability for Innovation to include AI

Outcome: 5-10% of the Province of Manitoba's annual technology budget is dedicated to AI and Machine Learning

Strategic Priority #3: Increase integrated skills development and relevant training to enhance career opportunities

Goal 1: Increase opportunities for work-integrated learning for students

Outcome: Graduates are set up for success, including communication and technical skills.

Outcome: Better access to funding for employers to provide job experiences for students, including non-permanent residents.

Outcome: Manitoba post-secondary students have a high degree of satisfaction with their experience.

Goal 2: Ensure greater collaboration between academia and industry regarding skills gap and relevant training programs

Outcome: Transparent feedback loop between industry and academia to learn the needs of industry.

Outcome: Aligned roadmap for skill development at post secondary institutions based on industry needs.

Outcome: The AI Hub of Expertise will be a mechanism for gathering feedback and identifying emerging needs to academia.

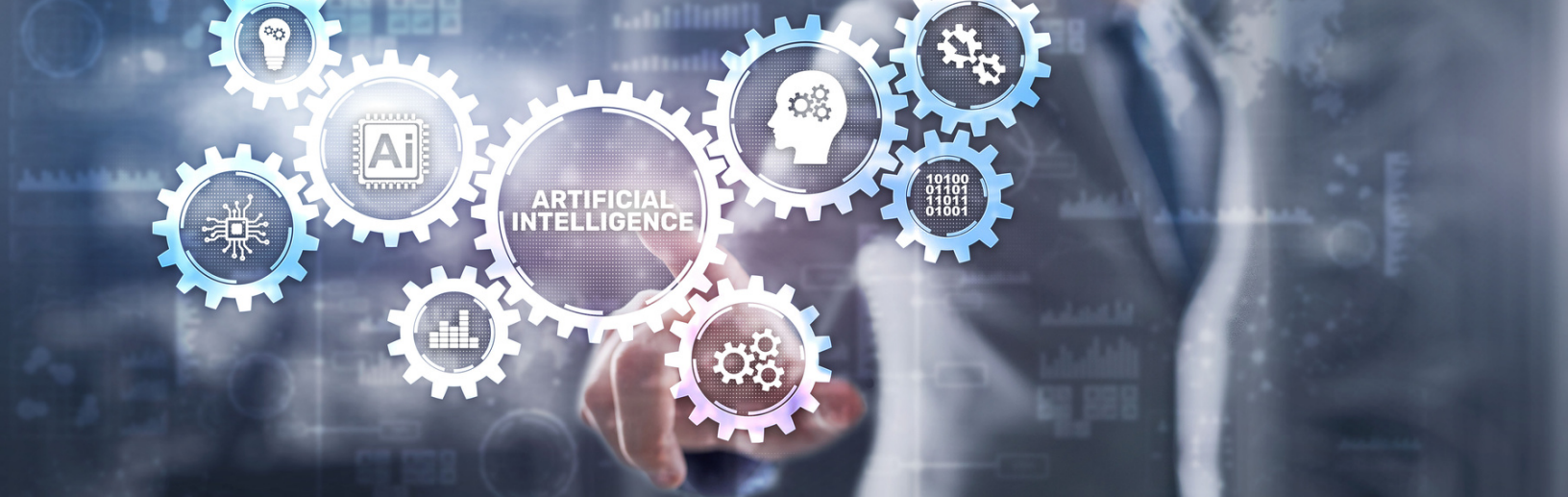
Goal 3: Re-skilling / Up-skilling existing workforce with machine learning and AI to enhance industry workforce

Outcome: There is a robust set of options for up-skilling programs, such as micro-credentials, short courses, workshops.

Outcome: Employers recognize the credentials gained by retraining programs.

Outcome: Increased diversity in the AI ecosystem by ensuring accessibility of courses to all candidates.





About Economic Development Winnipeg

Economic Development Winnipeg is an economic development agency and champion for local growth. They use expert analysis to highlight the Winnipeg Advantage and prove why Winnipeg is the best place to live, work and visit. Governed by a private-sector board and driven by the needs of the business community, EDW grows the local economy by attracting business, investment, events and people to the city.

Contact: wpginfo@edwinnipeg.com

Website: www.economicdevelopmentwinnipeg.com

About Tech Manitoba

Tech Manitoba is one of Manitoba's major tech industry associations, dedicated to facilitating connections and growing our tech sector. They serve their members by bringing a diverse group of people together to share skills, explore ideas and build a strong community. With over 190 corporate members and representing over 10,000 employees, Tech Manitoba has an established network that makes it easy for members to grow their business.

Contact: admin@techmanitoba.ca

Website: www.techmanitoba.ca

About MI-AP

Manitoba Industry - Academia Partnership is an initiative to facilitate industry-academia collaboration for the economic, societal health, and vitality of Manitoba. Funded by Prairies Canada, MI-AP works with Manitoba's PSIs and the Business Council of Manitoba to develop a people-centred strategy so that Manitoba is well positioned to succeed in a rapidly changing environment.

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