



Canada's AI imperative
From predictions to prosperity

omnia**AI**



Musée McCord, II-123880

Like **Harriet Brooks**, the pioneering Canadian nuclear physicist depicted on the cover of this report, we believe in pushing the boundaries of emerging fields of enterprise. We also firmly believe Canada can and should lead the way, especially when it comes to the most significant innovation of our times: artificial intelligence. The trick will be to lead globally while creating a vibrant domestic ecosystem to support innovation—and keep innovators like Harriet in Canada.

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Artificial intelligence (AI) is expected to be one of the leading economic drivers of our time, and Canada has the opportunity to be a global leader. We have the research strength, talent pool, and startups to capitalize on, but that's not enough if we truly want to lead in an AI-driven world and shape what it might look like. True leadership is required—that means taking steps now to establish a world-class AI ecosystem in Canada.

Introduction

As the transformative potential of AI technologies becomes clear, companies and countries around the world are frenetically competing to become leaders. They're doing so because evidence increasingly suggests that AI will be one of the leading economic drivers of our time, with recent estimates of worldwide AI spending reaching US\$78 billion by 2022—creating worldwide business value of US\$3.9 trillion.¹

Thanks to the leadership of a small group of academics and institutions, Canada has been an early research and talent leader in the AI space to date. But the state of Canada's leadership in AI is precarious at best. Our research shows that Canada's current efforts are insufficient if we truly want to lead in an AI-driven world and shape what it might look like.

Not enough Canadian businesses are investing in AI, given its transformative potential. And even when they do, most companies struggle to move past the experimentation phase to unlock real value. Our early policy efforts around AI are encouraging but they double down on research and talent—our existing areas of strength—while ignoring some of the real gaps and challenges that our businesses and society face in adopting AI technologies.

True leadership requires demand for AI, not just supply. Unless our businesses and policymakers take action, Canada could end up providing talent, research, and

startups that feed the growth of other countries, their companies, and their academic institutions without reaping the benefits domestically. And if Canada doesn't step up to the plate globally, the AI standards and practices that are developed could look a lot less human-centric and a lot more protectionist.

We need an AI prosperity strategy for Canada. We're not just talking about more holistic public policies either. We need a shared vision for what it will take to maximize the economic and social gains that can be realized through the effective use of AI across business, government, and society.

This is not a task for government or business to tackle alone. We need a strategy for prosperity that unifies and empowers Canadian businesses and policymakers to take action in pursuit of common goals and demonstrate global leadership in mastering the opportunities and challenges these new technologies present.

What would a prosperity strategy look like in practice? And what would it really take for Canada to lead? This paper launches a new multi-part Deloitte series on Canada's AI Imperative. Its purpose is to provide a platform on which to engage business and policy leaders about what it will take for our country to claim a leadership position in an AI-driven world and to explore different dimensions of what an AI prosperity strategy could look like.

This first installment of the series explores the opportunity AI presents for Canada and outlines some of the challenges our businesses and policymakers must address if they genuinely want to lead.

Not enough Canadian businesses are investing in AI, given its transformative potential. Most companies struggle to move past the experimentation phase to unlock real value.

There's a clear economic and social imperative to invest in AI

Given the buzz around many emerging technologies today, it can be tempting to dismiss AI as hype. Science fiction-esque descriptions of general AI—machines with the full capability to mimic and surpass human-level thinking and behaviour—abound. Some argue that the exponential growth of data, our advances in machine learning, and increased computing power represent the creation of an entirely new factor of production in the pursuit of economic profit.²

Others contend that—at this point—AI merely represents an extension of advanced analytics.³ This divergence in the way AI is represented in business and public policy discussions is in large part due to differing definitions of it and views on the promise of various AI technologies (see Figure 1).

Truthfully, there are still many unknowns about general AI's potential and humanity's ability to grasp it. But regardless of whether we ever reach the point of general AI, there's still a clear imperative for a country and its businesses to invest in AI technologies, and to shape the economic and social conditions required to foster their uptake.

Figure 1: Key terms

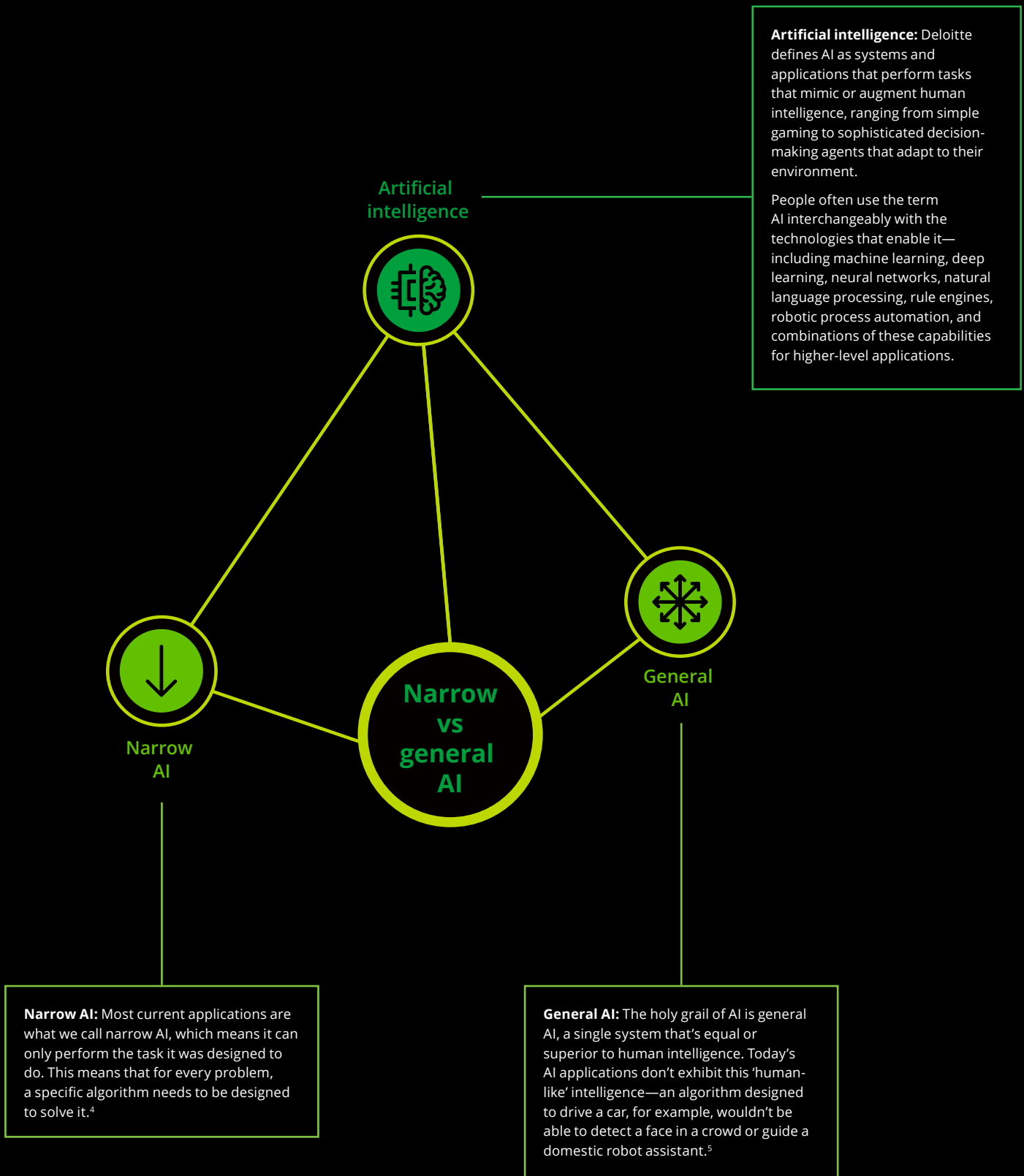
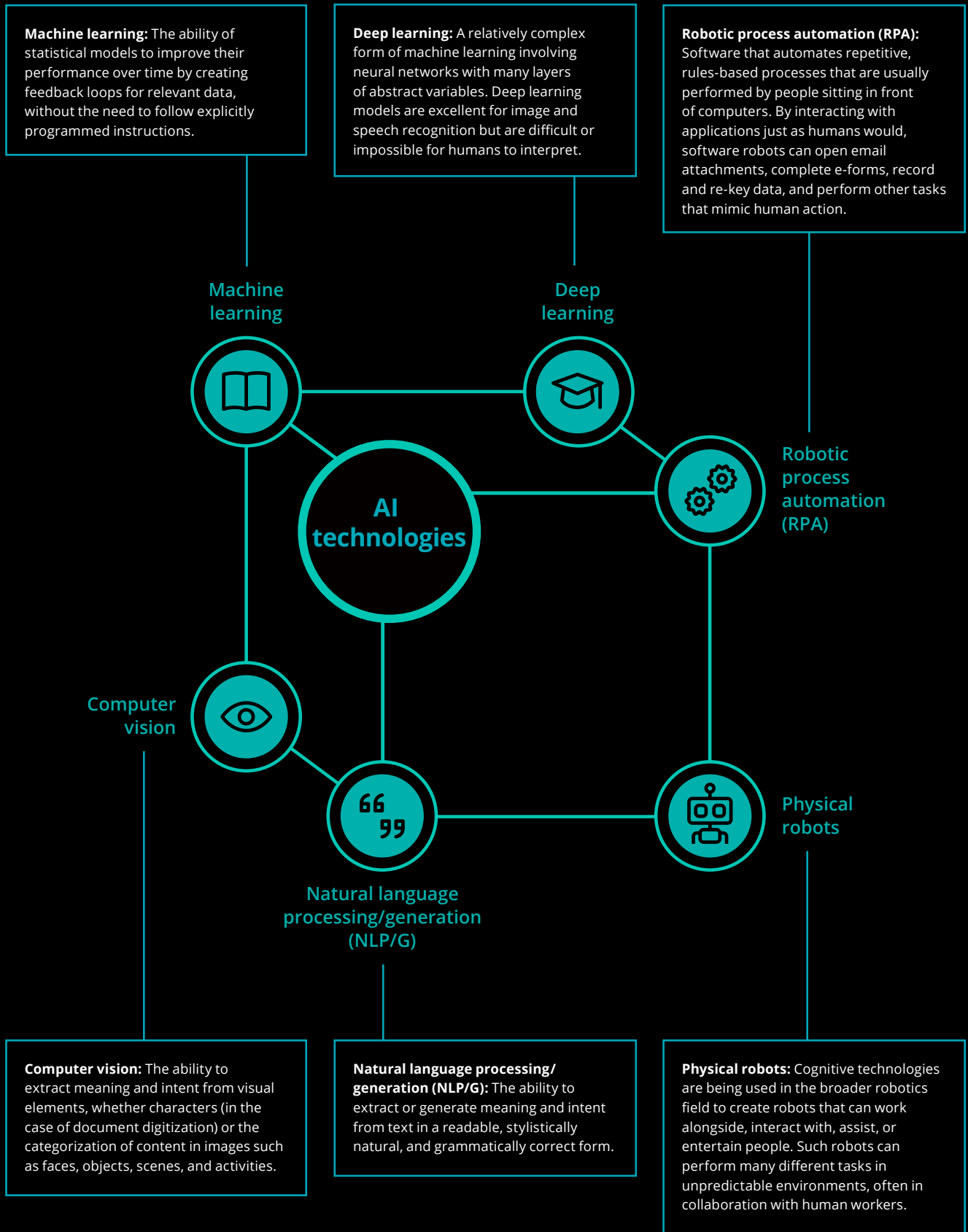


Figure 1 (cont'd): Key terms



AI might be the economic driver of our time

Technological advancements such as blockchain, augmented reality and virtual reality (AR/VR), and 3D printing are undoubtedly important to our economy and society. But there are compelling reasons to believe the impact of AI will be fundamentally different from most other technologies we hear about today or can think of throughout human history (see Box 1).

As a result, in the not-so-distant future, AI will likely transform virtually every industry—from financial services, mobility, and manufacturing to healthcare, education, and the public sector. In a world where corporations like Amazon and Google are calling themselves "AI-first" companies and using AI to drive innovation, lower costs, and improve performance by an order of magnitude, more traditional businesses are increasingly left with no option but to embrace AI in order to remain competitive.

In fact, there's evidence that many industries are already being transformed:

AI is being used to better engage customers, drive down production costs, and improve business performance in a number of sectors.

In financial services, RBC's AI-driven virtual assistant (called NOMI) has provided customers over 200 million insights on managing finances in the first eight months since its launch. This has resulted in an increased use of the bank's mobile app and a 20 percent increase in the opening of savings accounts.¹⁰ Minestar Group, the largest Indigenous-owned oil and gas service provider in Western Canada, has been working to speed up its bidding process with the help of an AI-enabled bid advisor. Early tests show these efforts could dramatically reduce bidding timelines—from six-to-nine months to 72 hours—while improving its bid/win opportunity ratio.¹¹

AI applications are becoming so pervasive it's easy to forget how they're already changing the way we live.

For example, every time we take an Uber, an AI application matches a driver for us and determines the best route the driver needs to take. And if you're unhappy with the service and want to complain, it's an AI system that connects you to the most relevant customer service agent.

Box 1: What makes AI so important?

A growing body of research finds that AI represents one of but a handful of human inventions poised to affect almost all industries and sectors of society at the exact same time, opening the door to new avenues of invention and problem-solving.

There's reason to think that AI is a general purpose technology (GPT). A technology is considered a GPT when it's seen as a core invention that significantly affects productivity or quality across a wide number of fields or sectors.⁶ GPTs aren't common, with some estimates of only 24 of them occurring throughout history.⁷ However, these types of inventions are key drivers of productivity and economic growth because of the spillovers and productivity gains they make across the entire economy. Examples include the steam engine, electricity, and the internal combustion engine as well as semiconductors, computers, and the internet.

Advances in deep learning may also represent a breakthrough in our ability to solve complex problems. Leading researchers argue AI may also represent a new "invention of a method of inventing" (IMI)—a new capability that allows us to invent and solve complex problems including "needle-in-a-haystack problems" and ones we couldn't even identify before.⁸

While certain advancements can be classified as either a GPT or an IMI, AI is unique in that it can arguably be classified as both.⁹ These types of inventions don't come along that often and the expected scale of economic and social change is likely to be at least on par with the rise of personal computing and the invention of the internet.

The social imperative to invest in AI

As Canadians, we have the opportunity—and the responsibility—to get this right. AI adoption is expected to mark a sea change in how our economy and society operates. For government and business leaders, it's a once-in-a-generation change management exercise.

If used effectively, AI can be a tool to make progress on some of society's most persistent challenges. For example, we can use it to enable healthier populations: disease control centres are using AI to forecast and address pandemic outbreaks by analyzing meteorological, geographic, economic, population, and mobility data.¹²

AI's predictive power could also enable us to better model future events, such as the effects of climate change, and engage in better prediction and scenario-planning to best tackle these problems. For instance, to address food shortages due to climate change, we can use AI-augmented decision-making to optimize agricultural returns and provide food to an additional two billion people by 2050.¹³

If left unchecked and ungoverned, AI is likely to create new problems and exacerbate others.

There's growing awareness of the potential for unintentional negative consequences from adopting AI, such as privacy issues, bias in algorithms, and the malicious creation of misinformation. Just like people, AI cannot always be trusted to be fair and neutral. For example, we're seeing predictive policing systems unfairly target certain neighbourhoods and ethnic groups because these systems were trained using biased data.¹⁴ Even global AI-driven giants are not immune. In 2017, Amazon had to discontinue its AI hiring tool as engineers discovered the tool was biased against women.¹⁵

There is also ongoing concern about AI's impact on jobs and employment. AI will create new categories of employment opportunities while rendering others obsolete.¹⁶ The resulting job churn, the need for reskilling, and new organizational models are of significant concern to government, business, and society as a whole.

As Canadians, we have the opportunity—and responsibility—to get this right.



The race to be a leader in AI is heating up

The best way to cope with the future is to create it.

Today, companies and countries that have the deepest data sets and most extensive AI infrastructures stand to surge ahead in the AI game—reaping the associated financial rewards and arguably redefining the world order. They have an opportunity to set the rules as well.

Canadian companies have to be using and pushing the boundaries of AI rather than just talking about it.

As a result, leading businesses and governments around the world are racing to capture the value that AI technologies are expected to generate. They know, based on lessons from past transformative technologies such as the development of open internet standards and connectivity standards in the mobile technology field, that early leaders shape their industries. For example, US leadership in shaping the development of 4G technology directly led to billions of dollars in economic benefit for American companies through patents and rights fees, and forced strategic competitors such as China to essentially follow the rules of engagement set by the United States.¹⁷

In addition to standard-setting, the uniquely data-heavy nature of AI means that being a first mover matters. Effective AI applications require large pools of data. The earlier an organization starts collecting data, the deeper its data pool becomes, which in turn results in more accurate algorithms and better data predictions than those of its competitors.¹⁸ This can lead to significant barriers to entry for followers as first movers may be driven to rapidly collect—and then hoard—data in specific application sectors such as search optimization, autonomous driving, or disease diagnosis.¹⁹

All of these fields are increasingly dominated by tech giants in two countries—the United States and China—and backed by increasingly nationalistic governments.²⁰ If countries like ours aren't able to step up to the plate to encourage standards and practices that favour global collaboration, it's likely the drive to hoard data will win out, stifling innovation and consumer choice over the long term. Also, if the AI field is dominated by a few select companies around the world, it's likely that Canada will miss out on the high-skilled jobs that AI will create.

Ultimately, early leaders in AI will begin carving a path toward one of two futures. One uses AI to foster unprecedented innovation, creating new discoveries, inventions, medical breakthroughs, and business use cases we can scarcely begin to imagine. The other future is one of protectionist data-ownership practices and the domination of global corporate giants that may result in unexpected consequences that governments and society may have difficulty dealing with.

In short, a great deal is at stake and Canadian companies can't afford to sit on the sidelines. As a small, open economy, our national interest lies in supporting fair competition on a global playing field with common standards that support innovation and uphold humanistic values. Having a strong voice will allow us to set the precedent for whether data is shared freely in a collaborative environment or whether it's hoarded to pit one country against another. Many have also argued that Canada—with its strong commitment to freedom, fairness, and multiculturalism—has something to offer on issues of privacy, inclusion and bias, and consumer protection²¹

But the issues that arise from AI transcend national borders—global cooperation and cross-sector collaboration will be required to resolve them. The ethical issues raised by AI will need to be tackled as they arise and those with firsthand knowledge and a stake in the game will inevitably decide the outcome. That means if we're serious about leading, Canadian companies have to be using and pushing the boundaries of AI rather than just talking about it.

What it takes to lead

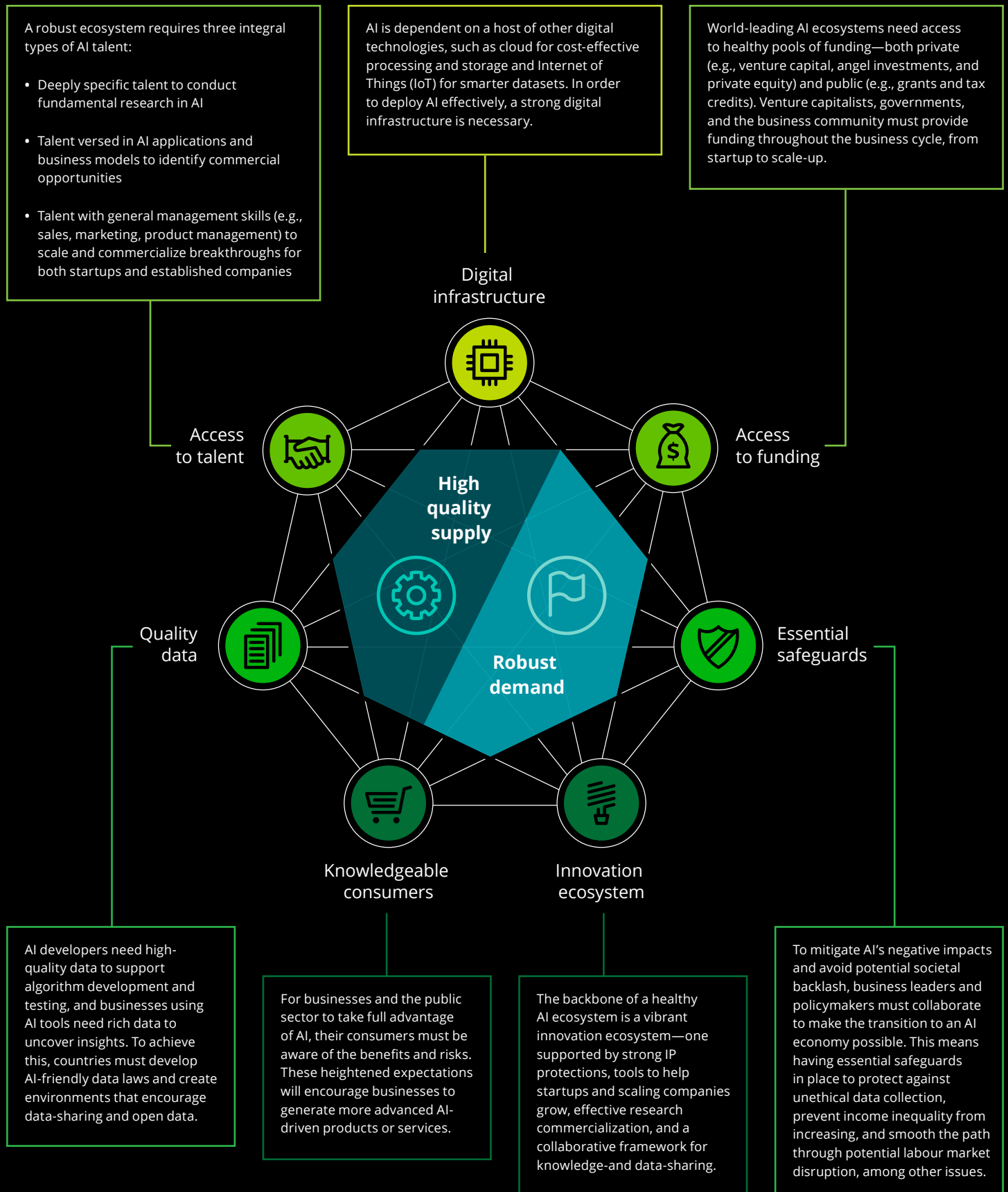
What are the ingredients of a world-leading AI ecosystem? Simple. They're the same ones that fuel any healthy industry or economy, and they're the ones that every student learns in Economics 101: high-quality supply balanced with robust demand.

High-quality supply: A leading country has a robust AI ecosystem, with vendors and talent that push technological boundaries and breakthroughs to commercial applicability as well as develop and sell AI domestically and internationally.

Robust demand: For a country to lead in AI, its businesses must be at a level where they're capable of experimenting with AI in intelligent ways and deploying it with a long-term, strategic view.

A strong foundation: Supply and demand hinge on a number of enabling conditions, which require the collaboration of businesses and governments to create; a political will to invest in AI; and a public sector committed to adopting AI technologies and providing better services for society.

Figure 2: Leadership requires a strong foundation



What it will take for Canada to lead

Canada has the talent pool, research strength, and base of startups to secure an early mover advantage in AI. But we have a fair number of challenges to overcome if we intend to compete and lead at the global level. A more balanced and sustainable AI ecosystem is required.

Our talent base and startup environment are strong

Canada is recognized internationally as a leader in AI research and talent. Continued investments, including the Government of Canada's \$125 million Pan-Canadian Artificial Intelligence Strategy, have reinforced this position. So far, these investments appear to be paying off. Canada has a promising AI ecosystem, with a number of interesting innovations taking place.

Box 2: The Pan-Canadian Artificial Intelligence Strategy

In 2017, the federal government charged the Canadian Institute for Advanced Research (CIFAR) with delivering its \$125 million Pan-Canadian Artificial Intelligence Strategy in partnership with the Alberta Machine Intelligence Institute (AMII) in Edmonton, the Montreal Institute for Learning Algorithms (MILA) in Montreal, and the Vector Institute in Toronto.²²

The five-year strategy represents a clear decision to double down on research and talent, Canada's existing areas of strength in AI. It has four goals:

- To increase the number of outstanding AI researchers and skilled graduates in Canada
- To establish interconnected nodes of scientific excellence in Canada's three major centres for AI: Edmonton, Montreal, and Toronto
- To develop global thought leadership on the economic, ethical, policy, and legal implications of advances in AI
- To support a national research community on AI



In recent years, numerous institutions and programs have been established to promote AI innovation and adoption, such as the Vector Institute, MILA, AMII, and NextAI. By some estimates, Canada boasts the third-largest concentration of AI experts in the world.²³ And world-leading companies are noticing—NVIDIA, Facebook, Microsoft, Uber, DeepMind, and Alphabet have opened or announced AI labs in Montreal, Toronto, Edmonton, or Vancouver.²⁴ These investments are translating into jobs and startups. From 2017 to 2018, there was a 28 percent increase in the number of active AI-related startups, bringing the total number of AI startups in this country to about 650 in major cities.²⁵ Meanwhile, Canadian job opportunities in AI have grown more than 500 percent since June 2015.²⁶

Our supply is robust, for now. However, businesses are facing classic Canadian problems: a lack of management talent, weak research commercialization, and brain drain.²⁷ And there's a worrying dearth of homegrown tech companies with a large global market share to capture AI's economic opportunities.

Effective public policies and enabling institutions are important for addressing these challenges. But fundamentally, they point to a demand-side problem that has long been mistaken as a supply-side problem. In short, companies and top talent will go to the parts of the world that offer the most interesting problems and the companies willing to pay to solve those problems. If those problems and companies are not in Canada, the supply-side talent advantage we're reinforcing with our current national strategy will wane as talent eventually leaves for greener pastures.

Top talent will go to the parts of the world with the most advanced problems and the companies willing to pay to solve those problems.

Our main challenge is driving demand

While Canada's AI startup environment and talent pool is relatively strong, it's the other component of a leading AI economy—the need for robust demand—that is of greatest concern. Unless Canadian businesses step up and start adopting AI in a more meaningful way, Canada can't hope to maintain its leadership position.

This doesn't mean AI companies in Canada should rely solely on the domestic market. Having a global orientation is a critical success factor for Canadian businesses.²⁸ But AI's innovative potential is in how it is used and applied. Working with domestic firms allows AI companies to develop and refine novel applications and skillsets that are applicable to global problems, thereby better preparing them to take solutions to international markets. And relying on international markets to generate demand is no guarantee of success. Talented Canadian AI companies have little incentive to stay if they cannot generate revenues in Canada.

Our data shows that, despite its transformative potential, not enough businesses are investing in AI. Deloitte's survey of Canadian companies shows that, in 2018, only 16 percent of all businesses reported using AI technologies over the past year—a number that has not budged since our last survey, in 2014.²⁹ AI is a technology meant for everyone. However, it seems the vast majority of businesses continue to operate under the misconception that AI's benefits are for the Googles or Facebooks of the world—even though there are ordinary companies in every industry that have deployed AI and earned the market benefits.³⁰

Canadian broadcaster Corus Entertainment, for example, worked with Integrate.ai to win back viewers from US giants such as Netflix and Amazon. When Corus deployed Integrate.ai's first AI-generated recommendation, it was 50 percent more effective than past efforts at generating viewership for certain shows.³¹ These are the types of opportunities that more Canadian companies need to start capitalizing on—today.

Unfortunately, we found that even Canada's early adopters are struggling to move beyond the experimentation phase and deploy AI in ways that achieve real value innovation (see Figure 3).

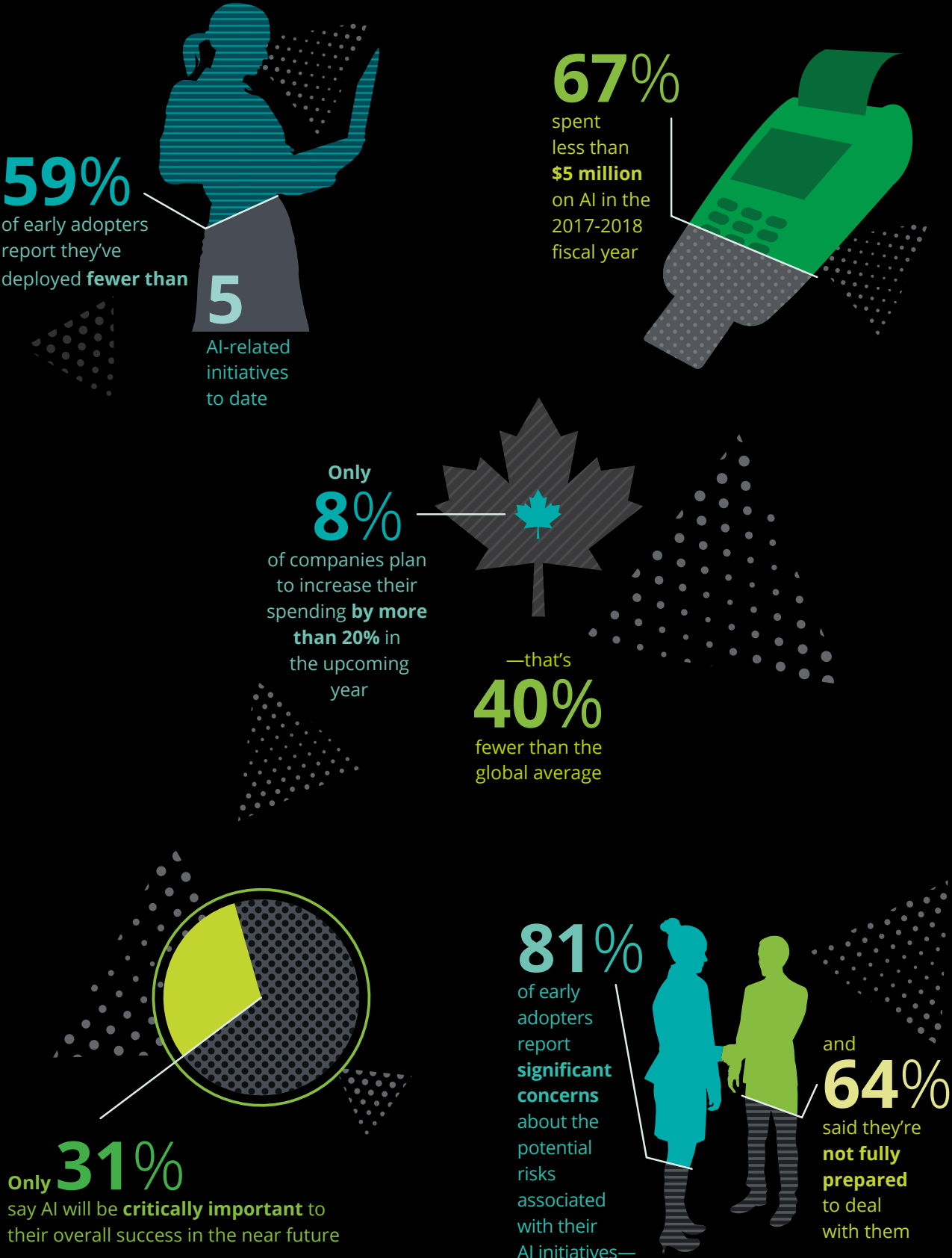
Box 3: Our approach

In order to understand the state of AI demand and adoption in Canada, Deloitte surveyed more than 1,000 Canadian citizens and 2,500 businesses from around the world between July and September 2018. Three surveys were conducted, each targeting a specific group:

- **Citizen survey:** To measure consumers' understanding, expectations, and beliefs about AI, we surveyed 1,019 Canadians from across the country. All respondents were aged 18 and older, and were intended to be representative of the general adult population. The margin of error on these results is +/- 3.1 percentage points, 19 times out of 20.
- **Canadian business survey:** We also asked a panel of 769 Canadian businesses about their uptake of emerging technologies, including AI. The panel was designed to represent the makeup of the Canadian business community, and all results were weighted by business size and geographic region. The margin of error on these results is +/- 3.6 percentage points, 19 times out of 20.
- **Global enterprise survey:** Finally, for the State of AI in Enterprise survey, we polled leaders of 300 Canadian and 1,600 international companies—large organizations that are aggressively adopting AI—to understand the practices and attitudes of early adopters. We asked them about their goals, spending, and results from adopting AI technologies, as well as the risks and challenges they perceive in implementing them.

All respondents in the global survey were required to be knowledgeable about their company's use of AI, and have direct involvement with their company's AI strategy, spending, implementation, and/or decision-making. The companies selected had to have reported global annual revenues of at least US\$50 million and have at least 500 employees worldwide. The margin of error on these results is +/- 5.7 percentage points, 19 times out of 20.

Figure 3: At a glance: Canada's early adopters



Four barriers limiting AI adoption in Canada

Our survey results point to a number of factors that may be preventing Canadian businesses from using AI to solve business challenges. All results in this section are drawn from our citizen survey and our survey of companies considered early adopters of AI.

1. You can't use something if you don't understand it

Demand is low in part because most Canadians don't understand AI or its implications. In our survey of over 1,000 Canadians, only 4 percent reported they were confident explaining what AI is and how it works.

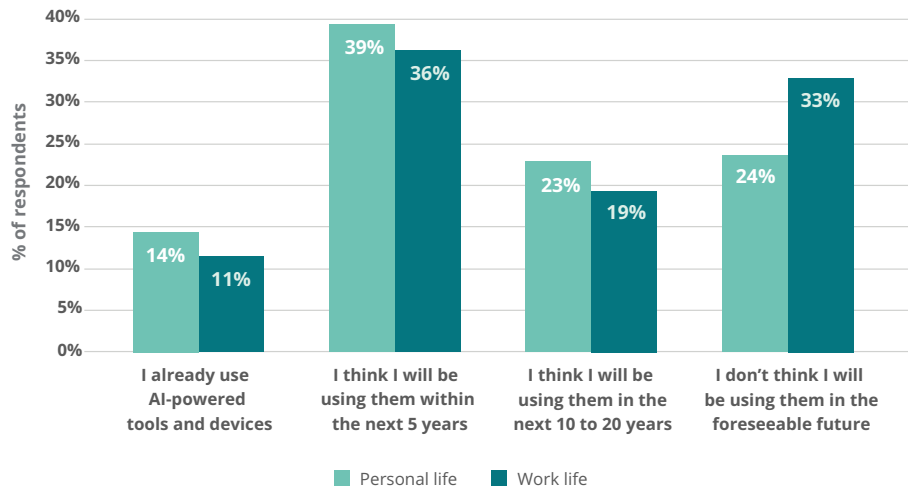
When asked about their usage of AI-powered tools and devices at work and at home, 86 percent of Canadians

said they currently don't use them and nearly 50 percent don't think they will within the next five years. In fact, a third of Canadians think they'll never use AI-powered tools or devices in their work lives and nearly a quarter say the same about their personal lives (see Figure 4). The number of people that report using AI tools should be much higher, given that 76 percent of Canadians own a smartphone and likely use Google Maps or virtual assistants like iPhone's Siri.³²

There is a clear disconnect between what Canadians think and know about AI and what it really is. This disconnect could prevent both businesses and consumers from understanding AI's benefits and potential applications, thereby limiting adoption in the long run.³³

Figure 4

Canadians: When it comes to AI-enhanced tools or devices, how do you project their usage in your personal and work life?



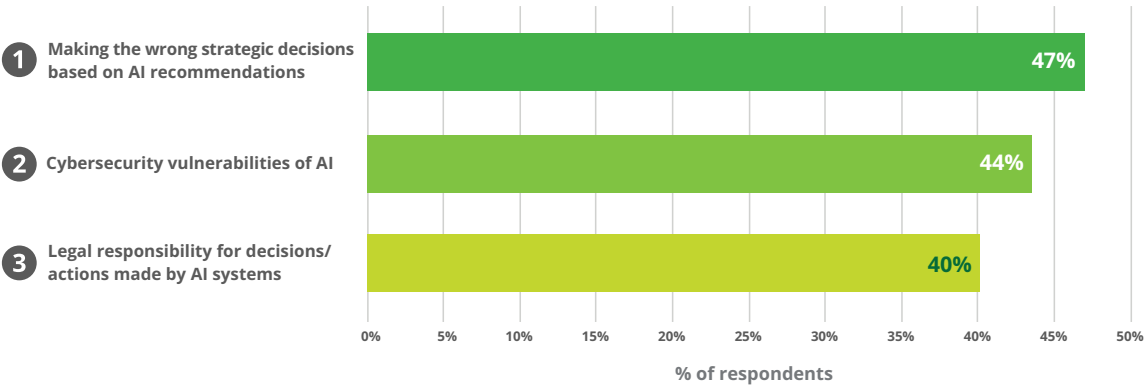
2. You won't use something if you don't trust it

When asked about risks, distrust of AI applications and concern over unintended consequences from AI-powered decisions were recurring themes from both businesses and consumers. Making the wrong strategic decision based on

AI recommendations was the top risk identified by early adopters when asked about the organizational risks of using AI, followed closely by cybersecurity vulnerabilities and unclear legal responsibility for decisions made by AI systems (see Figure 5).

Figure 5

Early adopters: Which of the following risks of AI is your company most concerned about? (Top 3)



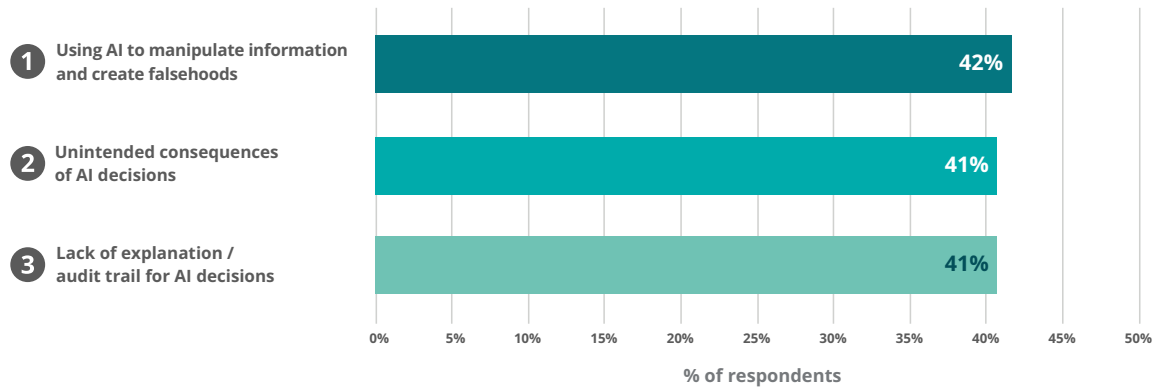
Global State of AI in Enterprise Survey
N=147

Note: percentage values are a summary of ranks 1,2 and 3 chosen by respondents



Figure 6

Early adopters: Which of the following ethical risks of AI is your company most concerned about? (Top 3)



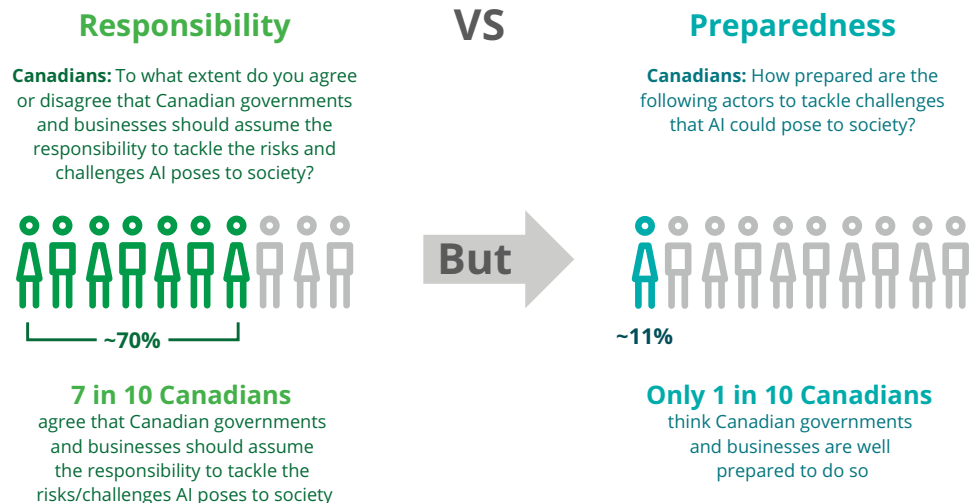
Global State of AI in Enterprise Survey
N=147

Note: percentage values are a summary of ranks 1,2 and 3 chosen by respondents

This lack of trust is even more evident in the ethical concerns identified by early adopters. The black-box problems of AI—such as the unintended consequences of AI-generated decisions, the lack of explanation for AI decisions, and the use of AI to manipulate information and create falsehoods—were of top concern to Canadian companies already using AI (see Figure 6). In fact, Canadian companies using AI were more likely to report these three as top concerns than their global counterparts.

For the most part, Canadians surveyed reported the same concerns as business leaders. Worryingly, they also reported a lack of confidence in the abilities of business and government to address imminent challenges, such as data privacy, cybersecurity, and ethical risks. The vast majority of Canadian respondents stated that both government and business have a responsibility to tackle the risks and challenges that AI poses to society, but just one in 10 thinks that either is well prepared for the task (see Figure 7).

Figure 7



Citizen Survey
N=1019

3. You can't buy it if you don't know what's being offered

A lack of awareness of what's on offer and a disconnect between companies that supply AI services or products and their consumers may also be holding back business investment. Many Canadian businesses don't understand what their businesses can achieve with AI. And those that do understand don't know where to turn for solutions. Sixty-eight percent of early adopters reported low to modest familiarity with selecting AI technologies and technology suppliers.

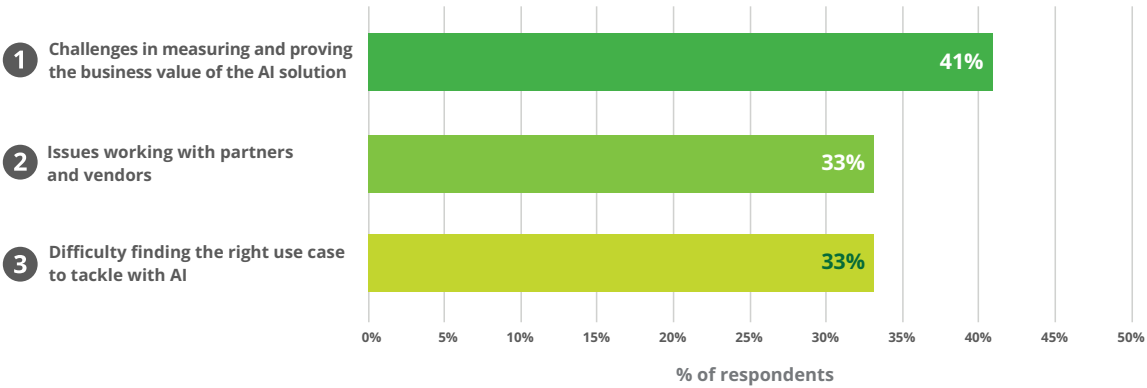
This also points to a weakness of AI suppliers in terms of raising awareness and proving the value and applicability

of their offerings. AI solution providers raised these concerns in our survey—they identified measuring and proving the business value of the AI solution as the top challenge facing their company (see Figure 8).

In many ways, this makes sense. A study from the Lazaridis Institute for the Management of Technology Enterprises at Wilfrid Laurier University found that talent gaps in sales, marketing, product management, and business development—the skills needed to transition a startup to market success—are a persistent issue for Canadian technology firms.³⁴ Both companies and AI suppliers need help to increase their capacity to bring technological solutions to bear on business problems.

Figure 8

Suppliers: What are/were the top three challenges for your company's AI initiatives? (Top 3)

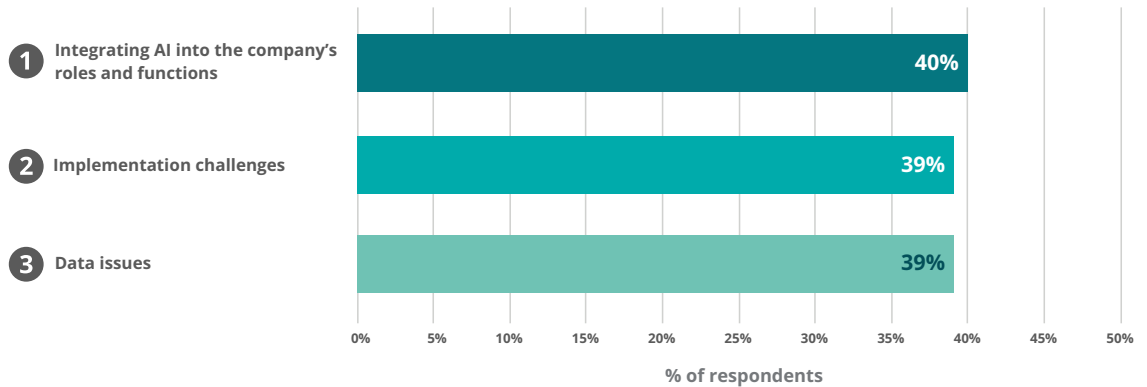


Global State of AI in Enterprise Survey
N=153

Note: percentage values are a summary of ranks 1,2 and 3 chosen by respondents

Figure 9

Early adopters: What are/were the top three challenges for your company's AI initiatives? (Top 3)



Global State of AI in Enterprise Survey
N=147

Note: percentage values are a summary of ranks 1,2 and 3 chosen by respondents

4. You can't scale it if you don't know how

It's usually easy to see results from a pilot on a small scale, but the real test begins when a solution or product needs to be scaled into a full production deployment.³⁵ Canada's early adopters are still very much in the experimentation phase with AI. Most respondents to our survey said their company has deployed fewer than five AI-related initiatives to date, and only a quarter of respondents said that they're undertaking one or more large-scale transformational AI initiatives that will affect the entire company.

Their biggest hurdles? Early adopters in Canada listed integrating AI into their company's roles and functions, implementation challenges, and data issues as their top three challenges when deploying AI initiatives (see Figure 9). All of these challenges speak to the need for a detailed strategy when deploying AI.

We need to act now to address the demand gap

To compete and lead in the global economy, more Canadian companies need to be actively using AI to solve business challenges—and those that already do must start investing much more than they are today.

Over the last few years, AI has evolved at a breakneck pace, reaching a point where it can now provide true business value. The ability of an organization to use AI to augment human decision-making and provide value to consumers could be a defining factor in whether a business succeeds or fails in the years to come.

While businesses may recognize the advantages of this emerging technology, few have taken strides to uncover how it can help them differentiate in the global economy. A lack of knowledge about AI, what it can do, and how to implement it, paired with emerging distrust of how AI will be used, represent significant barriers to adoption.

Canadian businesses and AI suppliers must take action to address these challenges and fill in the gaps they see in the Canadian ecosystem. Strong leadership from business, coupled with complementary changes in public policy to foster the growth of a healthy and balanced AI ecosystem, is needed (see Box 4). Ultimately, neither business nor government can address these challenges on its own. We need a more comprehensive strategy—as a nation—to use AI to drive long-term prosperity for our country.

Box 4: Canada's public policies must go further

The federal government has shown significant leadership in establishing early strategies to support AI research and talent development, as well as laying the groundwork for policies that promote the responsible use of AI in government.³⁶ These efforts are encouraging, but they're not enough.

Current policies don't adequately address the barriers businesses face to successfully deploy AI technologies and they're ill-equipped to address the looming challenges that AI's adoption could present to consumers and society.

Canadians expect governments to tackle the risks of AI and prepare for disruption. When asked what critical steps they think governments should take to prepare for the impacts of AI, the majority of Canadians pointed to guidance on how AI can be used, as well as interventions aimed at supporting and training workers (see Figure 10).

The concerns about workforce disruption are not trivial, and deserve an answer. Governments should be considering how to make the Canadian workforce more resilient to disruption. This could mean a turn toward life-long learning and reskilling, as well as a different approach to education for people entering the workforce. The private sector also has a role to play; companies may need to re-imagine professional development on a radical scale. Although the worry that AI will take away millions of jobs is likely exaggerated, even milder changes in how we work—for instance, solutions that

"keep humans in the loop"—will emphasize the need for different skills and talents.

Stronger public policies to address businesses' concerns and boost investment will be required.

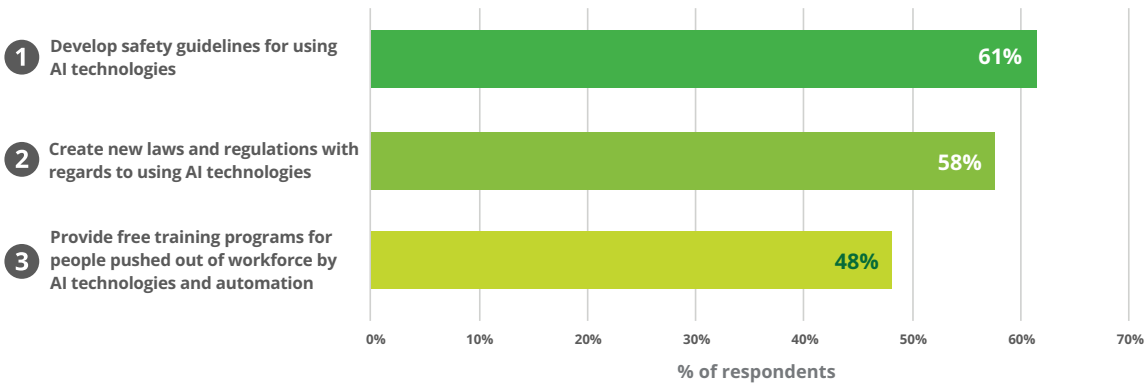
Existing public policy tools that address the diffusion of AI—such as data and privacy policies, intellectual property laws, and national incentives for innovation—should be examined to boost the overall domestic ecosystem.³⁷ Early adopters in Canada point to some areas of concern that will need to be addressed for businesses to fully embrace AI, including cybersecurity threats and the legal responsibility for decisions/actions made by so-called black box systems (see Figure 5).

Certainty is paramount for adopters and burgeoning AI firms that want to be sure their technologies will continue to be viable in Canada. Adoption is happening against the backdrop of new emerging norms surrounding data and privacy, spanning the spectrum from the European Union's General Data Protection Regulation to the more permissive approaches of the United States.

With the course of privacy law uncertain, companies are understandably nervous. Worse, prominent public examples of bias in machine prediction may alarm organizations that are increasingly attuned to their obligations around diversity and inclusion. There's a strong role for government in helping to clarify how existing legal obligations map onto current realities.

Figure 10

Canadians: Given the advance of AI technologies and their potential effect on our lives, which of the following, if any, do you believe the government should do?



Citizen Survey
N=1019

It's Canada's time to lead

It's becoming abundantly clear that AI will fundamentally reshape the way we as Canadians operate—in our businesses, in our governments, and in our everyday lives. The shape that change will take has yet to be formed. This report argues that Canada has an opportunity, and a responsibility, to be a global leader and help guide the future of AI. The rewards for doing so—and the penalties for missing out—are too great to ignore.

To become an international leader, we first need to foster a top-tier AI ecosystem at home. We won't get there without concerted action. Canada has an enviable head start when it comes to some aspects of such an ecosystem, including our talent pool, research strength, and startups. But our research also reveals critical weaknesses that must be addressed without delay.

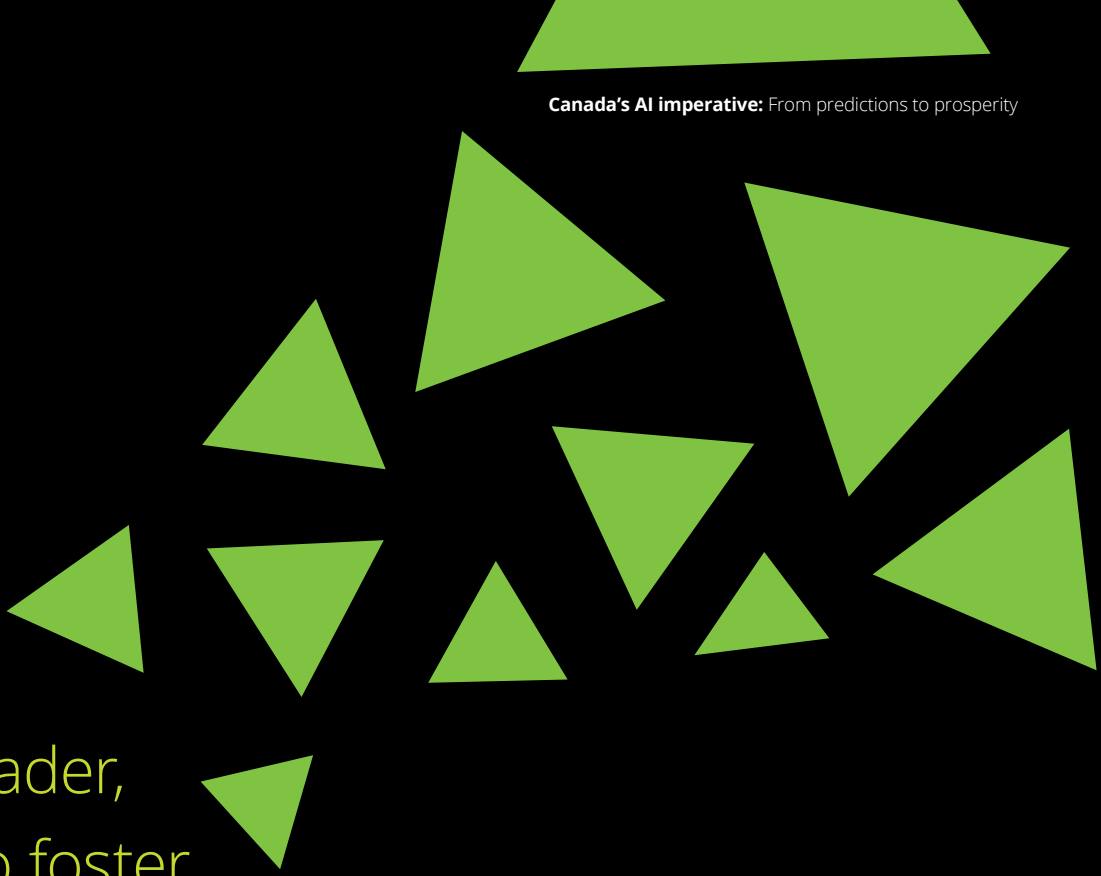
Creating a world-leading ecosystem will require a shared vision and a plan for action to maximize the economic and social gains that can be achieved through the effective use of AI across business, government, and society. In other words, we need an AI prosperity strategy for Canada.

What would such a strategy address and what should it include? The framework for an AI ecosystem and some of the challenges laid out in this paper are a start. We have highlighted some key areas where leadership is needed, including working to increase awareness and understanding about the uses of AI, creating the certainty and supports needed to spur AI's diffusion across our economy, and developing strong public policies that provide the protections citizens expect and deserve.

To be effective, developing and implementing an AI prosperity strategy requires the active participation of multiple stakeholders. Canadian business leaders, AI technologists, and policymakers must all play a role. Only then can we truly claim to be a global AI leader, capitalizing on both the economic and moral imperatives for leadership.

It's Canada's time to lead. By surfacing our country's challenges, this report is meant to spark action on solutions to ensure we do.





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omnia**AI**

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