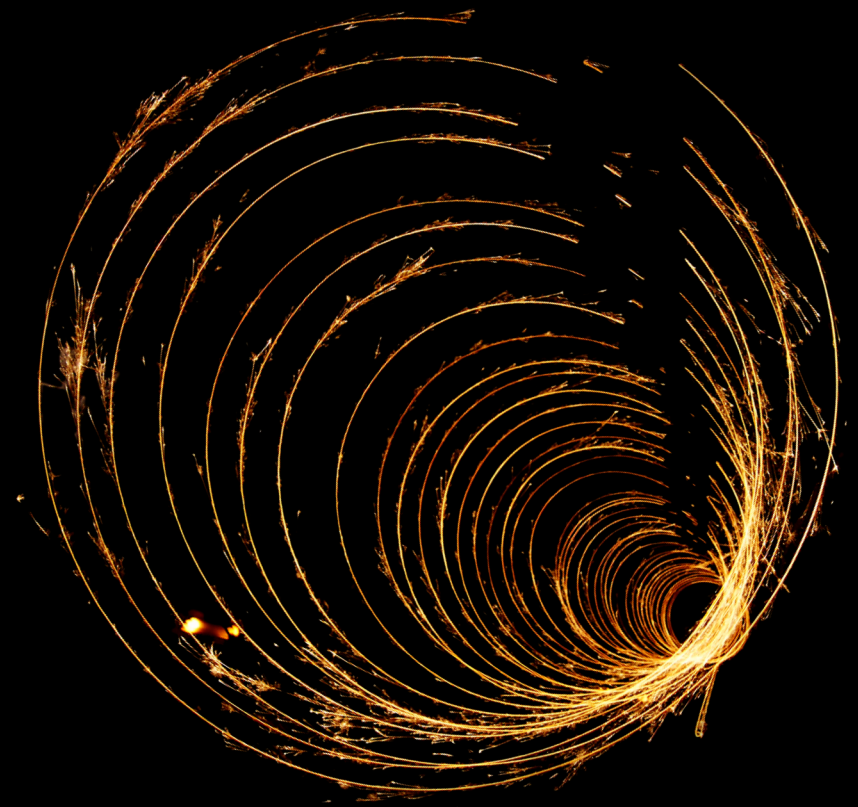
Realizing the Alberta AI Business Plan



January, 2019

The Opportunity

The **Alberta AI Business Plan** outlines the vision and ambition that will put Alberta on the map as a **leader in Artificial Intelligence**, paving the way for a billion dollar industry in the province by 2025

Why AI?

70% of companies [will] adopt AI by 2030, potentially delivering additional economic output of around $13 trillion, boosting global GDP by 1.2% a year.

McKinsey Global Institute

The Fourth [revolution] is evolving at an exponential rather than a linear pace. Moreover, it is disrupting almost every industry in every country.

World Economic Forum

China has laid out a development plan to become the world leader in AI by 2030, building a domestic industry worth $150 billion.

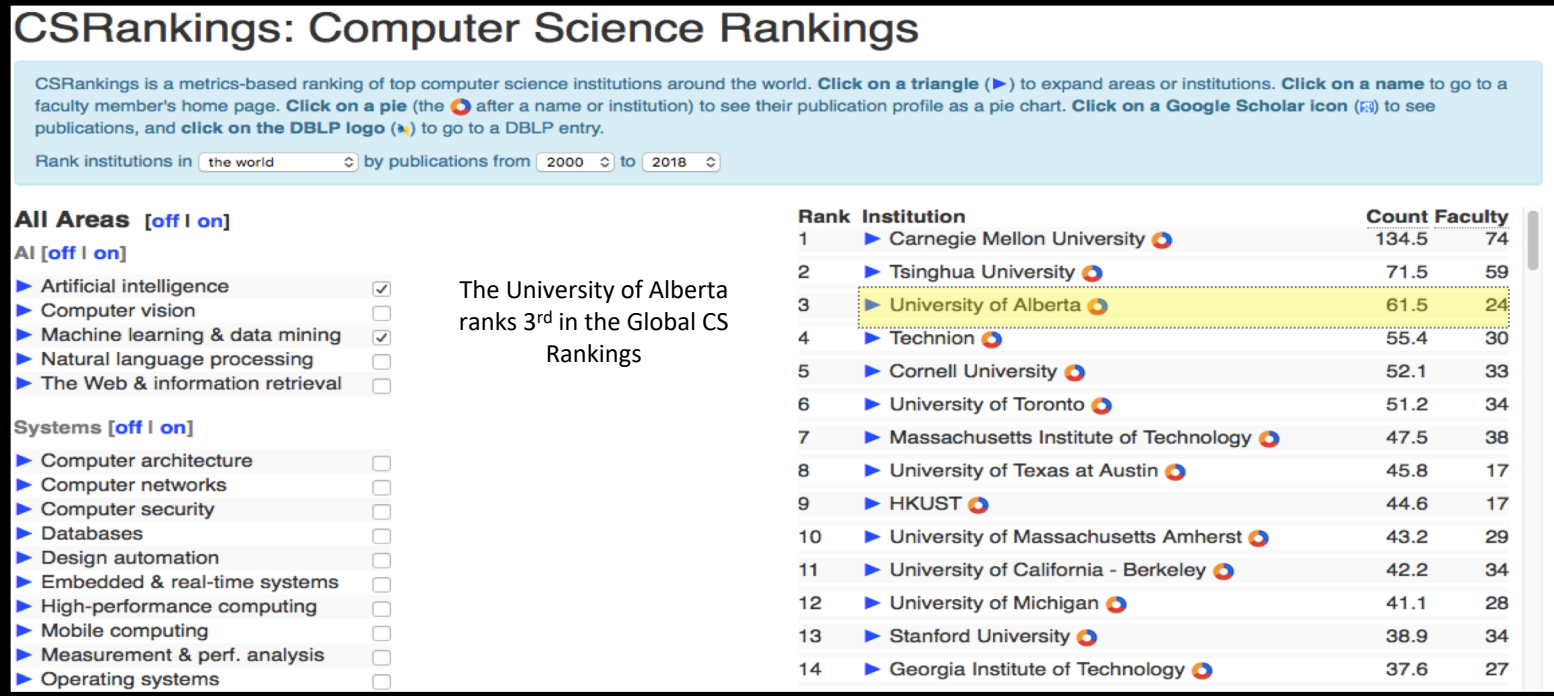
NY Times

Why Alberta

Alberta is already an AI leader.

Home to **two of the greatest AI and machine learning research centers** (University of Alberta -UofA and Alberta Machine Intelligence Institute - Amii).

Opportunity to translate that research strength into economic wealth for Albertans (new companies and new jobs) and to diversify our economy



CSRankings: Computer Science Rankings

CSRankings is a metrics-based ranking of top computer science institutions around the world. **Click on a triangle** (▶) to expand areas or institutions. **Click on a name** to go to a faculty member's home page. **Click on a pie** (the after a name or institution) to see their publication profile as a pie chart. **Click on a Google Scholar icon** to see publications, and **click on the DBLP logo** to go to a DBLP entry.

Rank institutions in the world by publications from 2000 to 2018

All Areas [off | on]

AI [off | on]

- ▶ Artificial intelligence ☑
- ▶ Computer vision ☐
- ▶ Machine learning & data mining ☑
- ▶ Natural language processing ☐
- ▶ The Web & information retrieval ☐

Systems [off | on]

- ▶ Computer architecture ☐
- ▶ Computer networks ☐
- ▶ Computer security ☐
- ▶ Databases ☐
- ▶ Design automation ☐
- ▶ Embedded & real-time systems ☐
- ▶ High-performance computing ☐
- ▶ Mobile computing ☐
- ▶ Measurement & perf. analysis ☐
- ▶ Operating systems ☐

The University of Alberta ranks 3rd in the Global CS Rankings

Rank	Institution	Count	Faculty
1	▶ Carnegie Mellon University	134.5	74
2	▶ Tsinghua University	71.5	59
3	▶ University of Alberta	61.5	24
4	▶ Technion	55.4	30
5	▶ Cornell University	52.1	33
6	▶ University of Toronto	51.2	34
7	▶ Massachusetts Institute of Technology	47.5	38
8	▶ University of Texas at Austin	45.8	17
9	▶ HKUST	44.6	17
10	▶ University of Massachusetts Amherst	43.2	29
11	▶ University of California - Berkeley	42.2	34
12	▶ University of Michigan	41.1	28
13	▶ Stanford University	38.9	34
14	▶ Georgia Institute of Technology	37.6	27

Where Will We Focus?

Health

Financial Services

Government Services

Energy

Construction & Engineering

Transportation & Logistics

The Business Plan: The Genesis

A 2-day AI strategic planning session in July 2018 resulted in a Vision and selection of a Steering Committee.

The Steering Committee has representatives from academia, industry, service providers, local organizations working since then to gather additional inputs from the community and ensure that the business plan created addresses the requirements and leads to the achievement of the vision.

Steering Committee Members

- Ashif Mawji, Rising Tide VC
- Bin Lau, City of Edmonton
- Bruce Alton, A-Partners
- Cam Linke, Amii
- Cheryll Watson, EEDC
- Chris Lumb, TEC Edmonton
- Cory Janssen, AltaML
- Cynthia van Sundert, A100
- Dalibor Petrovic, Deloitte
- Evan Hu, Creative Destructive Lab
- Forrest Zeisler, Jobber
- Jonathan Schaeffer, University of AB
- Ryan Kelly, City of Edmonton
- Terry Rock, Calgary Technologies Inc.

Steering Committee Advisors

- Chris Godwaldt, COSIA
- Reg Joseph, Health City
- Dave Mowat, Past ATB Financial
- Carman NcNary, Dentons
- Allan Scott, Past EEDC
- John Shillington, Amii
- Curtis Stange, ATB
- Dan Wicklum, COSIA

The Business Plan: Development

Consultations

Interviews conducted with various ecosystem players to gather data for initiatives and to build the business plan

Persona Interviews

Interviews with 5 community profiles: young local tech talent, business leader, investor, university AI researcher and a startup founder to understand the varying ecosystem needs

Letters of Support

Support from businesses, investor groups, higher education institutions and other AI bodies.

AI Community Meetups

70+ leaders from the community attended 2 community meetups with ongoing communication via a website and a slack channel.

Steering Committee Meetings

Weekly 3-hour steering committee working sessions with guest participation from industry and government

Market Research

Jurisdictional scan and market research to supplement the inputs obtained from the consultations

Business Plan Socialization

We are here

The ambition is to leverage strengths to create a billion industry and a Global AI Hub.

This business plan outlines ways to leverage the existing ecosystem and its strengths, such as skilled and entrepreneurial talent, and a great quality of life to achieve a very ambitious vision

Our Vision:

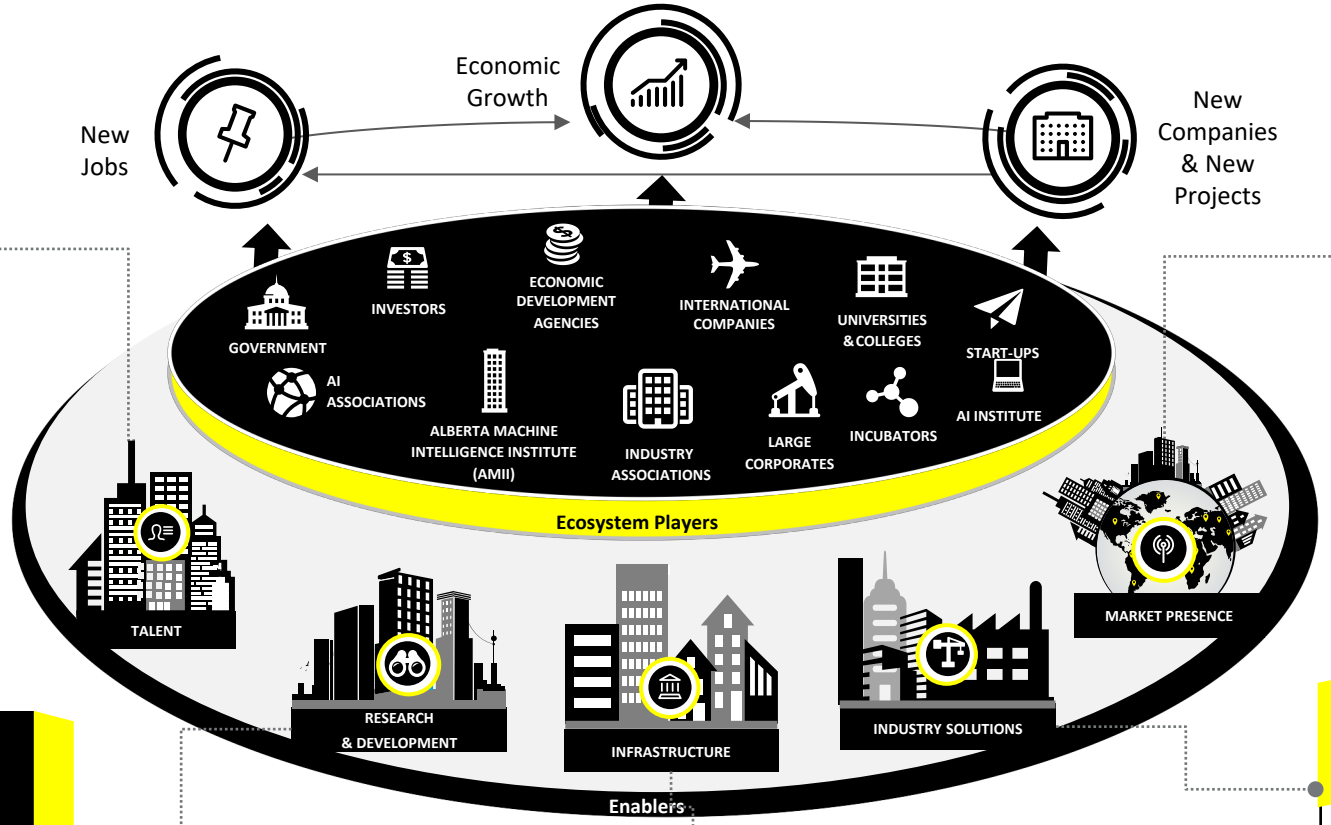
"A world-class hub for AI-driven products and services creating a billion dollar industry in Alberta by 2025"

Our Ambition:

"Continually growing a local ecosystem of fundamental and applied research, talent, data, infrastructure and capital that leads to the creation of commercially-focused intellectual property and ethically responsible and globally competitive AI-driven products, services and companies"

The Business Plan: Blueprint

The target ecosystem, which will drive new AI jobs, new companies & projects and economic growth is created through five enablers.



TALENT

Develop the workforce that will be employed in the AI ecosystem

- Entrepreneurs
- Innovators
- Technical Talent
- Executive Talent
- Business Talent

MARKET PRESENCE

Strengthen profile, build community and increase market share

- Trade Events
- Competitions
- Summits
- Branding and Marketing
- Community Events
- Public Relations

RESEARCH & DEVELOPMENT

Build on our world-class academic research and translate it into Intellectual Property creation

- Scientific Research
- Applied Research

INFRASTRUCTURE

Create the environment that is required to succeed

- Funding / Capital
- Technology
- Space

INDUSTRY SOLUTIONS

Create the environment to foster industry engagement in the ecosystem

- Education
- Ideation
- Prototyping
- Product Development and Launch
- Industry Data

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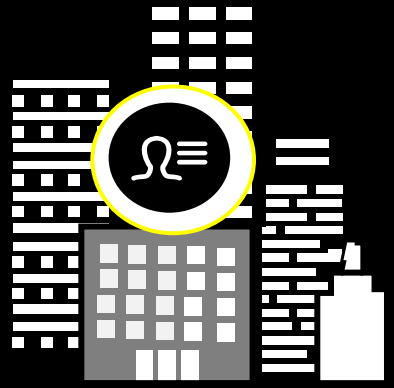
Enablers Overview



Talent

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- Entrepreneurs
- Innovators
- Technical Talent
- Executive Talent
- Business Talent

T1: Expand university education programs & supporting training programs

- Increased student capacity, faculty positions & infrastructure at UofA
- New certificate programs for retraining and product development skills
- Expanded supporting programs at other Alberta universities and colleges
- Recommendations for updates to K-12 curriculum

T2: Expand AI internships & co-op programs

- Increased number of AI related co-op/intern positions
- Increased number of students taking up internship and co-op opportunities
- Centralized easy-to access website with related co-op/iintern postings

T3: Strengthen AI talent recruiting programs

- Expanded ongoing recruitment programs in and outside of Edmonton
- Competitive offers, benefits and incentives to attract and retain talent
- Centralized easy-to access website with AI related job postings

T4: Develop AI talent exchange & mentorship programs

- Increased number of students and professionals participating in AI exchange programs
- Increased number of new AI entrepreneurs matched with a mentor every year

T5: Promote flexible academia/ industry positions

- Increased number of joint academia/industry researcher roles created
- Increased patent creation and commercialization activity by researchers who hold joint academia/industry positions

Research & Development

Build on our **world-class academic research and translate it into Intellectual Property and Product creation**

- Scientific Research
- Applied Research

R1: Expand academic research capacity

- Addition of new researchers in AI
- Increased number of students performing research
- Increase in funding for AI research
- Diversification of AI research focus beyond Reinforcement Learning and Gaming
- Expanded facility & technology capacity to meet the research expansion needs

R2: Expand applied & industrial research capacity

- Alberta is ranked to being the world's best at the intersection of industry and AI
- Increased number of corporate research labs and research collaborations with UofA and Amii
- Increased number of jobs created through corporate labs and research collaborations
- Enhanced coordination and collaboration with improved connections between innovation supports and outputs (supply side) and industry receptors (demand side)

Infrastructure

Create the environment that is required to succeed

- Funding / Capital
- Technology
- Data
- Space

I1: Develop & implement funding strategy

- Increased public and private investments in AI
- Increased in availability of risk capital and increased deal flow visibility
- Increased visibility in how to obtain funding
- Increased number of companies and projects funded

I2: Attract & establish AI accelerator programs

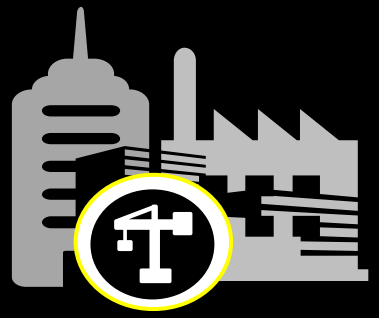
- World-class accelerator established
- Increased number of new ideas funded / year with the support of the AI Accelerator
- Use cases and business problems identified that can be solved using AI startups
- Increased number of jobs created

I3: Establish AI Hub governance & collaboration

- Committee operational and chair selected
- AI Hub recognized as the go-to driver of AI engagement in Alberta

I4: Establish AI HQ

- Headquarters (physical and/or virtual) established in existing or new space
- AI Hub portal established as the one stop shop for all information related to AI



Industry Solutions

Create the environment to foster **industry engagement** in the ecosystem

IS1: Establish AI Product Dev. Program

- Increased number of AI products developed
- Increased number of startups applying for the accelerator program

IS2: Expand Industry AI Knowledge Transfer Program

- Greater synergy between industry and researchers
- Increased commercialization of research
- Industry use cases identified and research is able to meet the industry needs
- Increase industry interest in new AI technology
- Industrial organizations identified and trained to adopt AI

I4: Expand Large Industry Data Sets

- Increased number of data sets available for AI research
- Increased number of products developed based on the use of large industry data sets

Market Presence

Strengthen profile, build the community and increase market share

- Trade Events
- Competitions
- Summits
- Branding and Marketing
- Community Events
- Public Relations

M1: Develop & Execute Marketing & Branding Strategy

- Increased social media presence and creation of Edmonton AI brand
- Raise international awareness of Alberta's AI strengths and capabilities
- Increased talent and investment attraction and retention
- Accelerated AI adoption across Alberta

M2: Conduct Ongoing Outbound and Inbound Visits

- Increased collaboration with other cities and countries and with municipal, provincial and federal trade departments
- Increased customer and/or partnership opportunities for the local AI community
- Increased number of visits by key customers and partners to Edmonton and Alberta

M3: Organize AI Summits, Conference& Competitions

- Ongoing large conferences and summits and smaller events like hackathons
- Open data student research contests
- Ongoing involvement in the Summer school program
- Monthly community meetups to keep the ecosystem stakeholders engaged

M4: Foster Dev. of AI User Groups & Associations

- Increased buy-in from current associations and groups
- Increased collaboration with existing or new industry associations that focus on the application of AI in specific industry sectors
- Increased clarity in mandate and value of AI user groups

M5: Develop & Implement Outreach Education Programs

- Increased opportunities for stakeholders to get familiar with AI and its potentials
- Increased awareness and trust with business leaders, community, investors and students
- Increased number of stakeholders involved in the AI ecosystem

Enablers

In addition to the enablers identified for creating the target ecosystem, there is **a need to advocate for key changes to bridge gaps in the ecosystem**

C1: Lobby for benefits, incentives and subsidies for organizations, startups and entrepreneurs in the AI space

Recommendations

- Lobby for expansion of international digital media tax credit to AI
- Lobby for subsidized marketing expenses, subsidized office spaces for AI start ups and companies based out of Edmonton

Benefits

- Retention of companies, start ups and entrepreneurs in Edmonton
- Increase in number of AI companies and projects

C2: Lobby for changing post-secondaries IP policies to streamline commercialization

Recommendations

- Prepare recommendations for the bold and attractive revised version of the policy
- Create a group of representatives to influence & lobby change approval

Benefits

- Perception of a more fair profit sharing split for IP owners and investors
- Increased number of products being commercialized

C3: Advocacy on adopting privacy, ethics & regulations in AI development

Recommendations

- Develop thought leadership on AI privacy, ethics and regulations (e.g. identification of what constitutes as harm when it comes to AI)
- Socialize and educate on responsible and ethical development of AI

Benefits

- Sustainability of ongoing responsible and ethical AI mobilization efforts

C4: Advocacy on expanding the available open data sets that can be used to drive AI IP creation

Recommendations

- Lobby for increase in the availability of relevant of Open Data from within government for local AI businesses
- Lobby for change on maintaining better catalogues of the open data

Benefits

- Increase in easy to access and use, relevant open data sets

The Business Plan: Initiatives and Calls to Action

Talent

Develop the workforce that will be employed in the AI ecosystem

- T1: Expand university education programs & supporting training programs
- T2: Expand AI internships & co-op programs
- T3: Strengthen AI talent recruiting programs
- T4: Develop AI talent exchange & mentorship programs
- T5: Promote flexible academia/ industry positions

Research & Development

Build on our world-class academic research and translate it into Intellectual Property creation

- R1: Expand academic research capacity
- R2: Expand applied & industrial research capacity

Infrastructure

Create the environment that is required to succeed

- I1: Develop & implement funding strategy
- I2: Attract & establish AI accelerator programs
- I3: Establish Alberta AI governance & collaboration
- I4: Establish Alberta AI - HQ

Industry Solutions

Create the environment to foster industry engagement in the ecosystem

- IS1: Establish AI Product Dev. Program
- IS2: Expand Industry AI Knowledge Transfer Program
- IS3: Expand Large Industry Data Sets

Market Presence

Strengthen profile, build the community and increase market share

- M1: Develop & execute marketing & branding strategy
- M2: Conduct ongoing outbound and inbound visits
- M3: Organize AI summits, conferences & competitions
- M4: Foster dev. of AI user groups & associations
- M5: Develop & implement outreach educational programs

Calls to Action

In addition to the enablers identified for creating the target ecosystem, there is a need to advocate for key changes to bridge gaps in the ecosystem

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- C2: Lobby for changing post-secondaries IP policies to streamline commercializati on
- C3: Advocacy on adopting privacy, ethics & regulations in AI development
- C4: Advocacy on expanding the available open data sets that can be used to drive AI IP creation

Alberta AI Business Plan: A Pipeline of Wealth Creation

The plan initiatives and calls to action collectively build a pipeline from R&D to commercialization and job creation

FUNDAMENTAL RESEARCH → RESEARCH → DEVELOPMENT → COMMERCIALIZATION

New Companies & Projects

New Companies
Increase in the number of AI local startups and inflow of new international corporates to Alberta

Increase in Projects
Increase in the number of AI related projects, research collaborations and corporate labs

New Jobs

Specialized AI Jobs
Increased demand allows for specialized AI talent formed here to remain in the province

Supporting Jobs
Growth in supporting jobs (data support, business support) allows re-skilling opportunities

Induced Jobs
“Ripple effect” downstream job creation (e.g. retail, housing)

Economic Growth

Our Billion Dollar Industry
A potential result of sustained demand in AI

Economic Diversity
Crucial for stable long-term economic growth

Economic Stability
AI service led industry can decrease sensitivity to resource price fluctuations

Taking The Business Plan Forward

An ask has been made to Alberta Innovates and the Economic Development and Trade Ministry to fund key initiatives. That funding supplemented by private sector investment will allow for an accelerated implementation of the plan.

To be successful, it is important to start right away! The journey begins with maintaining the support to Amii and executing a 60 day action plan.

Step 0

Define and formalize the governance structure to own and deliver the business plan

- Finalize key decisions around governance of the business plan.
- Obtain funding dollars to recruit the resources (in existing entiti(es) or new entity) and initiate the execution of the plan

Step 1

Engage broader community

- Create a communication plan to share business plan more broadly

Step 2

Begin foundational work on the identified initiatives

- Talent: Roll out retraining programs and define curriculum for product development initiatives
- Research & Development: Define new research positions and identify potential candidates for consideration
- Infrastructure: Initiate talks with existing world class accelerator programs to short-list accelerators that meet Edmonton's needs
- Market Presence: Initiate development of marketing plan and initiate branding efforts (the plan will be amplified as funding is obtained)

Thank you

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