

# ENTERPRISE MACHINE INTELLIGENCE & LEARNING INITIATIVE

Canada is a trusted source of food. Canadian agriculture and agri-food is recognized worldwide for its safe and high quality production and processing, supporting trade and exports. Agriculture is a GDP growth star. EMILI offers the opportunity to accelerate this growth through motivating corporations to identify, invest in and partner with AI and machine learning expertise to improve their productivity, and lead global food production, processing and marketing in the 21st century.

## CEO-Led

EMILI - Enterprise Machine Intelligence and Learning Initiative - is a **CEO-led** not-for-profit, headquartered in Winnipeg, MB, combining Canada's industrial strengths in agriculture and artificial intelligence and machine learning (*together, "AI"*). The twinning of these two Canadian assets is what elevates EMILI from a cluster proposal to a supercluster initiative.



## Most Advanced Agricultural Economy in the World

EMILI's vision is bold and ambitious. It is to leverage Canada's industrial strengths in AI and agriculture to develop the most advanced agricultural economy in the world through: 1) transforming the legacy agfood sectors with new AI embedded (self-learning) technologies; 2) development of a new industry around Ag-AI technology (in which the ownership of IP and the means of productivity is a key industrial asset of the future); and 3) supporting the training (and retraining) of the middle class to capture the new AI and data-driven jobs of the 21 century.



## Pan-Canadian - Broad Ag. Sector Focus

EMILI's **regional focus** is western Canada, with pan-Canadian impact. AI technologies and tools developed in one corner of the agricultural economy will have application for accelerating productivity and competitiveness in other areas. EMILI is a **broad sector initiative**. It supports best in class commercial activities that deliver impact for Canada *vertically* (from genetics to consumer health), *horizontally* (canola, pulse, livestock, horticulture, aquaculture, beef, dairy etc.) and *across the innovation continuum* (with the focus on commercialization to market readiness).



## Commercially-Designed Co-Investment Model

EMILI has a commercially-designed co-investment plan to drive \$521 million ++ , including private sector investments, to transform the sector -ensure AI is a core part of the country's agricultural sector DNA - and create wealth and jobs for the future. Additionally, EMILI has been designed to interlock with with the NRC's new advanced manufacturing centre for Winnipeg, the Pan Canadian AI Strategy (co-ordinated by CIFAR), the Advanced Manufacturing supercluster plan (anchored in Waterloo) and many other innovation initiatives across Canada. Food and beverages processing industry is the largest of all manufacturing industries in Canada; accounting for over 17 per cent of manufacturing jobs.



## Commercialization Through Matching Dollars

EMILI will match private sector investments (up to 50 cents on the dollar) to accelerate AI uptake among agricultural firms and enterprises in Canada, firm/sector productivity, competitiveness, AgFood trade and exports, and formation of venture, M&A funding pools into the sector. To start the ball, EMILI has established a \$90M direct investment venture fund (Bison Venture Fund) to take successful AI/ML candidates to market, and to attract further growth capital.



## Sector Convenor

EMILI will leverage its CEO network to rally technology, agriculture, high net worth individuals



and capital markets sectors to work together to achieve company growth objectives, expand on current engagement momentum. This includes specially-design AI convening and knowledge exchange platform in which members can interact directly with \*EMILI\*.

### **Access to Venture Capital for Growth for Canadian Firms**

EMILI has developed a \$90M direct investment venture fund to accelerate global market entry and adoption of Canadian AI products and services. The Bison Venture Partners Fund (*working title*) will be headquartered in Manitoba, with offices in Waterloo, Toronto, and Montreal. The Private sector will invest up to \$60 million, with total assets under management (AUM) of \$90 million CAD at the first close. A request has been made to the Province to contribute \$30M. Opportunity exists for agricultural companies to participate in the Fund. Forecast IRR (to LPs) estimate to be 31 per cent over a 10 year period.



### **IP Protection and Freedom to Operate**

EMILI will provide advisory services and access to intellectual property experts and commercialization giants to build a robust patent Ag-AI portfolio for Canada. In addition to internal resources, EMILI has partnered with Waterloo-Toronto based AiX, to provide access to intellectual property experts to build a robust patent Ag-AI portfolio for Canada. Members will get access to experts on litigation strategy. AiX will build a prior-art library to assess members with defences and provide advice on IP exposure reduction and licensing.



### **Skills, Training & Capacity Building**

EMILI will develop innovative approaches to AI skills development and broadening workforce participation, working with the training and skills development sector across Canada and with a focus on Indigenous peoples, women, and middle class jobs. This includes the retraining of existing employees to use new data-driven AI tools, and training of new talent to support the development of Ag-AI sector growth.



### **EMILI's Data Bank**

EMILI will support a high-value, trusted agriculture data-use environment which will deliver long term benefits for Canada. This will enable small and large businesses, communities, Indigenous Peoples and government to use agriculture data to innovate, tailor more effective products and services, and inform policy and advice. The partnership will be led by a small, cross-sector working group. Statistics Manitoba and Statistic Canada will provide technical and expert support. In kind support has been offered to establish this.



### **Indigenous People**

EMILI will work with Indigenous Peoples on workforce participation issues that might impact its communities and opportunities for the use of AI-ML to provide sustainable business operations. A focus on small land holdings, and use of remote technologies will be a feature of this work.



### **Stewardship of Land and Resources**

Agricultural activities contribute to ten percent of Canada's greenhouse gas emissions, and impact the environment in various ways. EMILI is committed to funding projects that identify novel ways to reduce GHGs and promote Canada as a leading steward of the land.



## Membership Structure

EMILI's membership structure developed to drive growth and outreach is as follows:

### EMILI Board Governance - AgFood and Technology Leaders

- CEO-led
- Senior Training/Academic Leaders
- Active recruitment underway to broaden Board to align with federal objectives

### EMILI Founding Members

- Provided seed investments and funding to support supercluster formation
- Provided significant in-kind contributions to support supercluster formation

### EMILI Investor Member (Matching Contribution)

- Financial contribution, up to 25% in-kind
- 50% matching from EMILI
- Projects must: integrate some form of AI/ML, and ave 1-4 Canadian industry and technology partners

### EMILI Cluster Member (Total Fees due for 5 Years)

- 500+ employees: \$10,000 (\$2,000/year)
- 100-499 employees: \$5,000 (\$1,000/year)
- 1-99 employees: \$2,500 (\$500/year)

### EMILI Affiliate Groups No Charge

- Research, Academia
- Talent Development
- Associations, Incubators, Accelerators

EMILI's **founding board** includes:

- |                       |   |
|-----------------------|---|
| • Ray Bouchard        | Board Chair, President and CEO Enns Brothers  |
| • Sandy Riley         | Chief Executive Officer and President of Richardson Financial Group   |
| • Leah Olsen          | President, Agricultural Manufacturers of Canada   |
| • Dr. Annette Trimbee | President, The University of Winnipeg   |
| • Vince Barletta      | Leader CEO, YES! Winnipeg   |
| • Bob Silver          | President Western Glove Works   |
| • Sean Barnes         | VP, PCL Construction  |
| • Kevin Lusk          | Canadian Manufacturers and Exporters  |
| • Paul Vogt           | President, Red River College  |
| • Dr. Peter Jones     | Director, Richardson Centre for Functional Foods and Nutraceuticals   |
| ● Dr. Amin Kabani     | Diagnostic Services Manitoba  |
| ● Dr. Lysa Porth      | Assistant Professor/Guy Carpenter Chair in Agricultural Risk Management and Insurance, University of Manitoba |

EMILI's **founding members** includes:

Enns Brothers	Farmers Edge
JCA Electronics	MacDon
Maxim Truck & Trailer	Megill Stephenson
Precision Weather Solutions	Western Glove Works
Growsafe	City of Winnipeg
Sightline Innovation	Global Health Systems
Department of Agriculture, Manitoba	Growth Enterprise & Trade, Manitoba



## EMILI's Investor Members

EMILI's *initial* 18 investor company projects are focused on a faster retooling of their businesses with intelligent AI systems. All of the companies and company directors have extensive experience in global agfood markets; many with comprehensive global supply chains established. Combined, the committed investor companies have >10,000 employees and annual revenue of in excess of >\$10billion.



**HEMP:** AI-based, hemp fibre optimization plant processing system



Autonomous water management, irrigation, insurance systems



**DAIRY:** Dairy processing optimization and automation



Combine precision agriculture equipment data, external data, with historical production data to provide optimization advice



**EQUIPMENT:** Autonomous power platform for agricultural



Increasing the capacity of Aboriginal inclusion in the Agriculture sector and bio-tech space. Automate and control the production systems of fish, food and algae ..



**EQUIPMENT:**Next stage advanced object detection and recognition capabilities



Creation of smart storage and verification for agriculture producers and processors. This will lead to enhanced logistics and traceability solutions for raw commodities and the value added processing industry



Largest plant/crop health signal data repository in the world within five years.



Accelerating real-time agriculture insights and business intelligence through the application of AI to meteorology and agro-meteorology data



**EQUIPMENT:** Accelerating the Farm of the Future Through the Use of AI/ML Tools."



Next Generation BioSurveillance Using AI/ML Tools - identifying risks to crop production and value-added processing before they cause significant loss



Harness advanced AI/ML tools that will increase the value of data management solutions for global agriculture



AI/ML analytical platform and sensor integration - Advanced manuf. processing, plant-bio integrity, disease/pathogen detection, food processing, protein integrity



**EQUIPMENT:** Spectral-Based Soil Sensing Technologies and Multi-Spectral Imaging Projects for Crop Disease Identification



Automated Technologies for Precision Horticulture, Smart Monitoring Systems for Greenhouse Floriculture



Quantify livestock GHG emissions and monitor reduction strategies, increasing feed efficiency and reducing methane emissions through genomics, genetic analyses of feed intake, efficiency and female fertility and cow lifetime productivity etc.

The early adopter "investor companies" are illustrative of the immediate tangible revenue and job opportunities derived from the adoption of intelligent AI systems. EMILI will seek to onboard new companies, or consortia of companies (notably, food processing companies) creating a self sustaining ecosystem. EMILI will run a competitive "open gate" process for selecting the best projects that deliver the greatest jolt for Canadian GDP (modelled on SDTC).

## EMILI's Cluster Members and Affiliate Groups

EMILI is connected across Canada and globally through direct linkages with: 1) **Pan Canadian AI Strategy** and its ecosystem of university leaders and incubators (Vector, CDL, MILA, AMII) through a partnership with CIFAR (co-ordinating body) and western Canada's University of Alberta's Advanced Machine Intelligence Initiative (AMII). Dr. Graham Taylor of Guelph University (formerly in Geoff Hinton's lab at UoT) is on the scientific working group of EMILI founding members; 2) **Training Colleges and Undergraduate Universities** - Led by the Presidents of Red River College and University of Winnipeg EMILI has established a training and skills working group addressing the need for new skills in the economy and rotation of the workforce as we enter a data-driven world; 4) **Canadian Council of Innovators** - Canada's top technology CEOs by revenues. CCI is led by *Jim Balsillie* and *John Ruffolo*; 5) **AiX** - leading Canadian patent experts and patent holders, *Chris Wormald*, *Jim Hinton* and *Peter Cowan*. Chris has acquired outright, or a license to over 1000 patents over the course of his career. Jim is a lawyer and patent and trademark agent. Peter has 18 years experience in IP strategy, and has led teams in 8 countries; and 6) **Indigenous technology leaders** -including 100% aboriginal owned Myera Group that has developed an agri-platform which uses Aquaculture, Artic Char, as the nutrient source for the production of sustainable food, animal feed and nutraceuticals.

## Growing Ag-AI Hub Around Manitoba

### Companies Using AI and ML in Region. Data Rich Environment

#### EMILI Current

Farmers Edge, Manitoba  
 Precision Weather, Manitoba  
 Growsafe, Alberta  
 DOT Technologies, Saskatchewan  
 PCL Construction  
 Pest Surveillance Initiative, Manitoba  
 Myera Group, Northern Canada  
 Sightline Innovation Inc. Manitoba  
 Invenia, Manitoba  
 John Deere Equipment

#### EMILI Planned

Enns Brothers, Manitoba  
 JCA Electronics, Manitoba  
 Ecoaction, British Columbia  
 MacDon, Manitoba  
 MNP LLP, Alberta  
 Fieldsmart Inc.  
 CIHC, Manitoba/Southern Ontario  
 Vineland/ABB, Southern Ontario  
 IIPS - Great West Life, Manitoba  
 CG Wellington, Southern Ontario  
 Roquette, Manitoba/Saskatchewan  
 Northstar Robotics, Manitoba  
 Terramera, British Columbia

