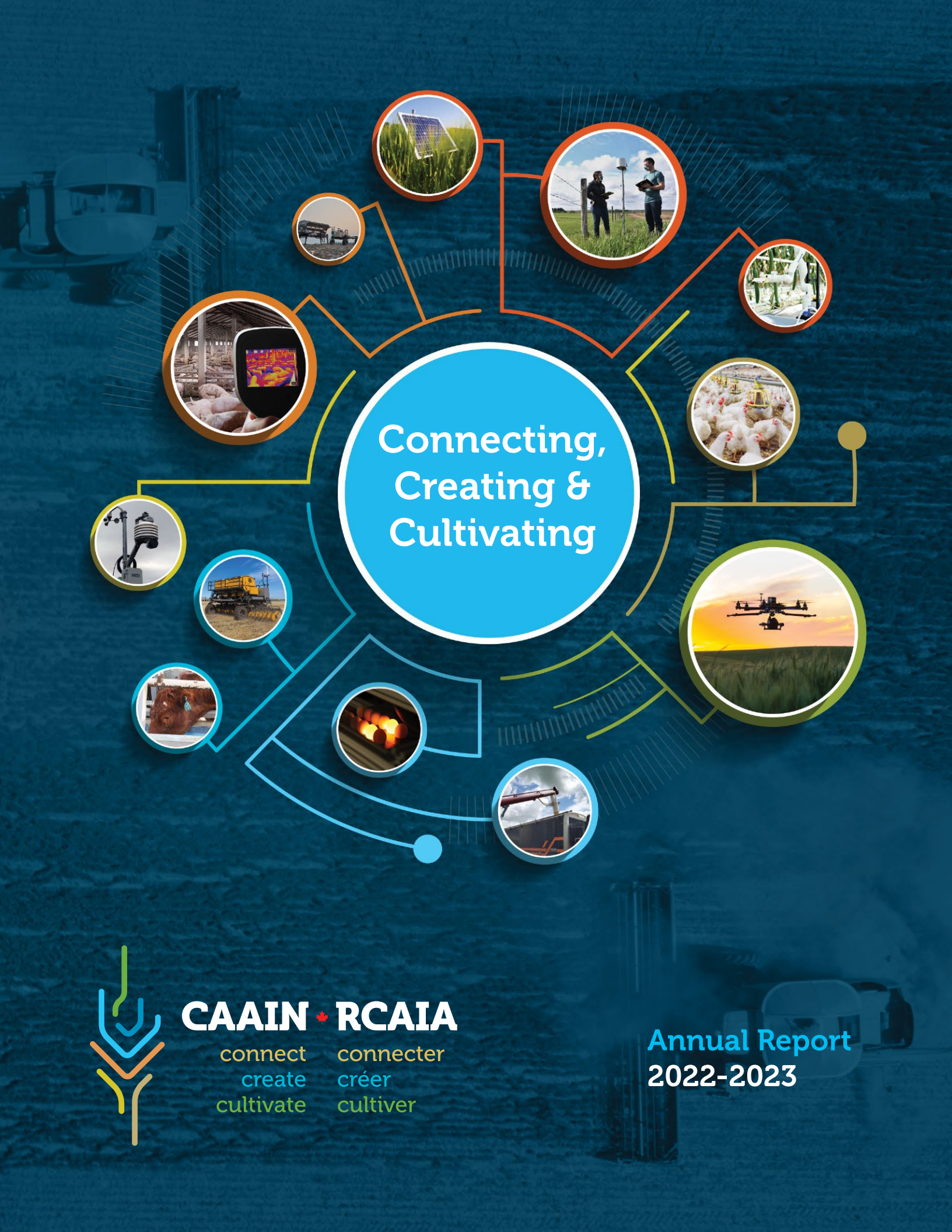


CAAIN · RCAIA

connect connecter
create créer
cultivate cultiver

Annual Report 2022-2023

Our Vision

We are Canada's leading AgTech innovation network.

Our Values

Community
Accountability
Respect
Excellence

SHAREHOLDERS

Marco Coppola
Rollie Dykstra
Hubert Lau
Patrick Machacek
Ian Potter

BOARD OF DIRECTORS

Laura Kilcrease (Chair)
Micheline Ayoub
David Bailey
JoAnne Buth
Stuart Cullum
Bethany Deshpande
Chris Paterson
Robert Saik
Fred Wall
Rickey Yada

TEAM CAAIN

Cornelia Kreplin
Interim CEO

Tracy Bowers
Executive Assistant

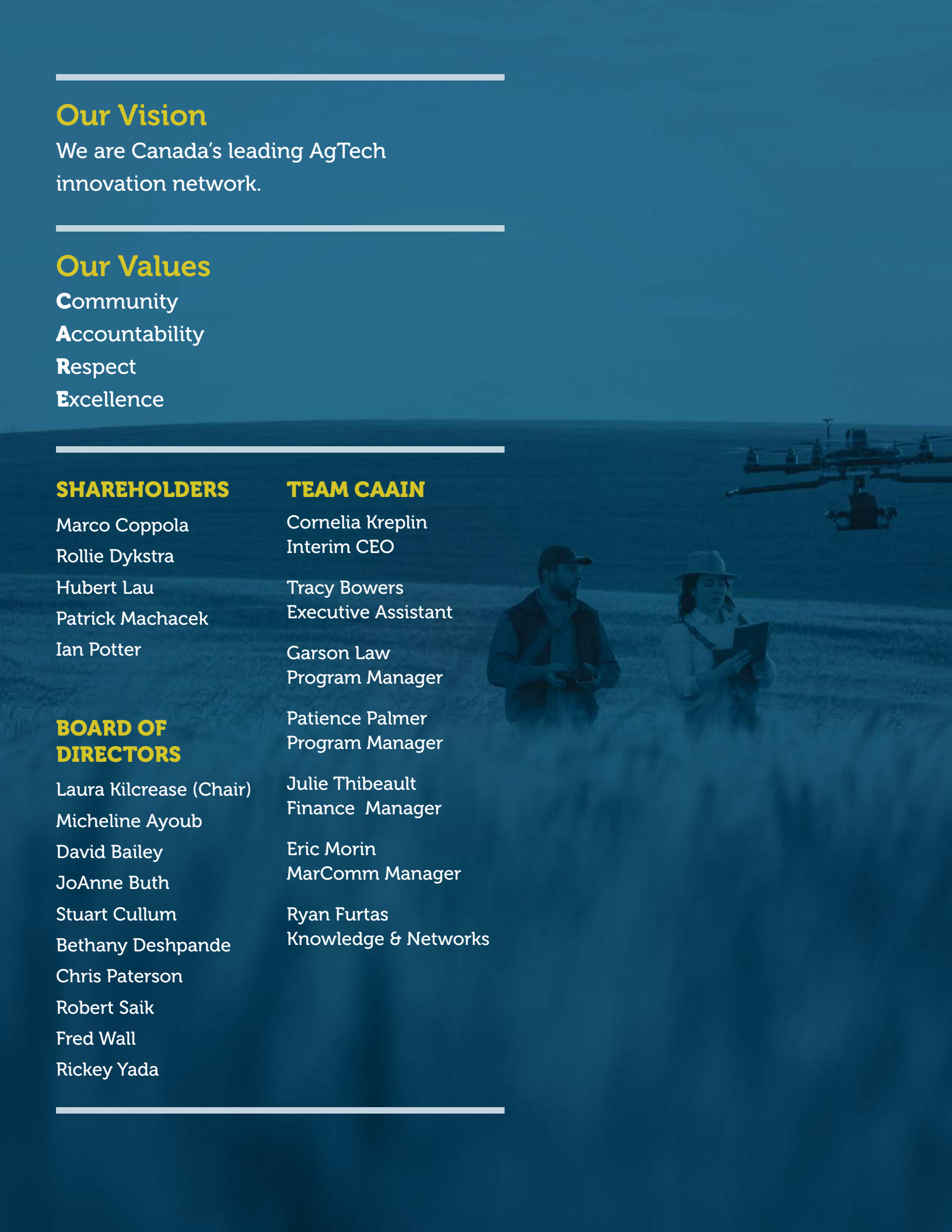
Garson Law
Program Manager

Patience Palmer
Program Manager

Julie Thibeault
Finance Manager

Eric Morin
MarComm Manager

Ryan Furtas
Knowledge & Networks



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Canadian Agri-Food Automation and Intelligence Network
2022-2023 ANNUAL REPORT

Message From The Chair

As I look back over the past year's accomplishments, CAAIN's mantra of "Connect. Create. Cultivate." seems very appropriate.

In 2022-23, we ramped up our efforts to **connect**, launching a new member portal, and attracting a growing and increasingly engaged network of diverse stakeholders who have a genuine interest in the development of Canada's agricultural technology sector.

Our funding for AgTech research and innovation **created** and supported projects focused on automation and the acquisition, analysis, and use of electronic data. Our cumulative funding commitments approached the $32 million mark over the past year, while the total value of the initiatives we support climbed above $90 million. That's an outstanding achievement for an organization that has yet to celebrate its third birthday.

We **cultivated** by supporting the expansion of a smart farm network (SFN). We leveraged that success by laying the groundwork for the development of a nationwide system of SFNs designed to facilitate producer understanding and adoption of the new technologies that will increase the agri-food sector's productivity and profitability, while reducing its environmental impact.

CAAIN's success is not accidental. It is the result of the hard work and dedication of a strong team led by an exceptional interim CEO, Dr. Cornelia Kreplin, who stepped down from a board position to help the organization until a new CEO is recruited. Our engaged and highly professional board of directors, as well as the committed group of five shareholders who stepped up to assume responsibility for the organization, should also be recognized for their dedication.

If the past year is any indication of where CAAIN is going, the next 12 months hold great promise. I look forward to seeing how we will continue to **connect**, **create**, and **cultivate** in order to support the efforts of those innovators and entrepreneurs who are helping Canada's agri-food sector maintain its global standing.

Laura J. Kilcrease, C.M.A., MBA
Board Chair, Canadian Agri-Food Automation and Intelligence Network

Message From The CEO

CAAIN's value can be summed up in a modified version of the fertilizer industry's 4Rs: We are the right organization, supporting the right projects, in the right place, at the right time. After all, we keep asking farmers to do more with less. At the same time, from supply chain issues caused by the COVID-19 pandemic and exacerbated by war in Ukraine and other hotspots, to record-breaking climate extremes and dwindling supplies of arable land and clean water, the root causes of food insecurity are numerous and varied.

Solutions to many of these big challenges do not yet exist but they are possible. Research and innovation (R&I) hold the keys to ensuring a growing global population can access the nutrition we need. CAAIN exists to support the efforts of the brilliant Canadian entrepreneurs, researchers, and innovators seeking to solve these significant problems.

We are not alone in encouraging the work of Canadian AgTech innovators and entrepreneurs. However, we do play an important role in expanding the footprint of our country's agricultural technology ecosystem by facilitating the development, and encouraging the adoption, of homegrown automation- and data-based approaches to improving agri-food system productivity, profitability, and environmental sustainability.

Over the past year, we have proven our value in numerous ways: 2022-2023 saw CAAIN advance the Beef and Pork Primary Processing Automation and Robotics Program, sign funding agreements with a dozen R&I project teams, bring two of our original Closed Competition projects to a successful conclusion, launch a Livestock Innovation Program call for proposals, and assume a leadership role in the development of a nascent nationwide system of smart farm networks. During this time our funding commitments exceeded the $31 million mark for projects with an aggregated total value of $92 million.

The last 12 months also saw CAAIN launch a new website and member portal, solidify our social media presence, and host a well-received online conference on cyber security in the agricultural technology sector.

We did all this while experiencing a change in leadership, as our permanent CEO, Kerry Wright, left to pursue other opportunities. I would like to take this opportunity to thank her for the progress she oversaw during her tenure. In other staff news, Team CAAIN grew with the addition of a second program manager, Dr. Patience Palmer, a Knowledge & Networks Business Partner, Ryan Furtas, and my right hand, Tracy Bowers, our Executive Assistant.

We could not have accomplished what we did in 2022-2023, or for that matter throughout the first three years of our existence, without the leadership of an exceptional board of directors, the extraordinarily generous ongoing support of Alberta Innovates, and the guidance of ISED. We appreciate their important and varied contributions to our success.

The next 12 months promise more excitement as we bring additional projects online, put the finishing touches on others, continue expanding our system of smart farm networks, and keep improving our member portal to expand the reach and representation of the CAAIN network. Join us. It's going to be fun and very worthwhile.

Cornelia Kreplin

Cornelia Kreplin, DVM, PhD
Interim CEO, Canadian Agri-Food Automation and Intelligence Network

Connecting

CAAIN is connecting by providing a platform that links diverse agri-food and technology stakeholders. The resulting community leverages new relationships, knowledge, and technology into potential business growth or viable projects benefitting the stakeholders and their fellow Canadians.

CAAIN IS CONNECTING...

Our Network

2022-23 saw CAAIN launch a new website and network portal whose membership stood at 232 as of March 31, 2023.

CAAIN also hosted its first workshop, a virtual event titled "Cyber Security: How to Protect Canadian Agriculture from a Growing Challenge," that was well received by the 60 registrants in attendance.

CAAIN's social media footprint continued to expand, with LinkedIn followers surpassing 1,400 and the Twitter feed connecting with 600 individuals and organizations.

CAAIN's weekly summary of the latest agri-food stories, "News Vine," is routinely opened by over 200 of its 650+ recipients, in addition to the other 100+ network members who are signed up for the online version.

Creating

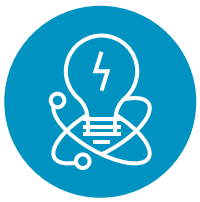
CAAIN is creating by fostering an environment that supports research and innovation leading to the development of automation- and data-oriented solutions to the major opportunities and challenges facing Canada's agri-food industry, allowing this vital economic sector to build on its standing as a global leader.

What CAAIN Has Created

FUNDING R&I

6 R&I Competitions

138 Applications



24 Funded Projects

1 Smart Farm Network

10 Automation

13 Data

$92M Total Project Value

$31M in CAAIN Commitments

$61M Committed by Project Partners

129 Collaborators

25 Academic & Research Institutions

11 Large Businesses

93 SMEs

ECONOMIC GROWTH

2019-2022 Company Investments

$26M on R&I

$15M in Capital Expenditures

R&I Employment

107 Jobs Maintained

49 Jobs Created

29 Work Integrated Learning Opportunities

CAAIN IS CREATING...

Automation

The professionals who manage CAAIN-supported projects tend to have one thing in common: a background in agriculture. Not so Raven Industries' Manager of Business Excellence, Marco Coppola, who leads the *Artificial Intelligence (AI) Development for Autonomous Agriculture Application* initiative.

Growing up in Regina, Saskatchewan, he couldn't not understand the importance of farming to the socioeconomic fabric of his native province, but he wasn't surrounded by it, and his Business degree focused on marketing and entrepreneurship, rather than ag. In 2017, while working for Saskatchewan Export and Trade Partnership, a provincial body tasked with connecting local companies with new markets, he provided support to farm-implement manufacturer SeedMaster. His efforts were appreciated, and one of the company's principals contacted him about joining DOT, a sister enterprise that was just starting its journey to develop autonomous farm equipment.

"The opportunity seemed exciting, because it involved a blend of high technology and agriculture," he explains. "I decided to go for it, and the past six years have been very rewarding. Our product is an autonomous power unit that performs various agricultural functions traditionally associated with a standard tractor. Instead of hooking up the tractor and towing a seeder or a sprayer, the farmer connects the implement to our platform, and programs in the mission, which is then completed autonomously. Because OMNiPOWER™ is self-propelled and carries the implement instead of pulling it, using our technology manages soil compaction, reduces fuel costs and emissions, and mitigates the effects of labour shortages. This last benefit is growing in importance. A recent study predicted that by 2025, 114,000 agriculture-related jobs will go unfilled across Canada, which represents more than 25% of the nation's entire agricultural workforce, resulting in millions of dollars of lost productivity annually."

Marco and his colleagues have made great strides despite experiencing significant change over the past 24 months. In 2021, DOT was acquired by Raven, which in turn was bought out by Case New Holland (CNH). In a relatively short period of time, the team went from 28 core employees to being part of a 60,000-person multinational corporation. Such a transition could have derailed the project, but the opposite is true. The result has been expanded capacity and resources, and an unwavering commitment to delivering on the objectives contained in the original DOT-CAAIN funding agreement.

The project team has researched and developed software and AI functions that include a classification model, autonomous implement loading, computer- and camera-assisted vision, multi-unit operation, field mapping, and the collection and processing of data. The result has been greatly improved mission programming and completion. "Our work has continued uninterrupted, despite the two acquisitions, but the scale has increased since CAAIN first started supporting us. We are still improving the autonomous technology, but instead of focusing solely on applying our advances to the DOT system, we can now integrate the features directly into various CNH platforms that would otherwise have been unavailable to us." Marco pauses. "The mergers have, of course, involved challenges and stress. But they have also allowed us to expand our reach significantly, broadening our impact much more quickly than we could have prior to the buyouts."

"Of course," he continues, "The CAAIN funding has contributed to our success in a number of ways. First, being approved after going through a rigorous review gave us instant credibility with various stakeholders. Without that legitimacy, Raven might never have purchased DOT. Second, it has allowed us to get the most out of the relationships we formed with post-secondary institutions and implement suppliers. Having multiple partners is extremely valuable but it's a double-edged sword when you're an organization as small as we were when the project launched. Every partner you bring on requires a commitment of time. CAAIN's support gave us the flexibility to add necessary resources that have paid significant dividends. The work we're doing with Olds College has generated data sets that that have allowed us to make important improvements to the platform. Similarly, we've been able to hand off some development activities to University of Regina students. Finally, there was an unexpected benefit early on when we were still DOT. To comply with CAAIN's requirements, we had to put in place business planning and management processes we didn't know we needed until we had them, but which improved us as a company."

The *Artificial Intelligence (AI) Development for Autonomous Agriculture Application* project has proven to be an excellent CAAIN investment, and the future of the OMNiPOWER™ platform appears bright.

$1,507,408
CAAIN Contribution

$4,152,732
Total Project Value

CAAIN IS CREATING...

Data-Driven Decision-Making

Growing up on a family-run seed farm in rural Saskatchewan, VeriGrain Sampling Inc. CEO, Ken Jackson, realized early on that he was more suited to designing and building things than he was to the rigors of a career in farming.

Accordingly, he studied mechanical engineering technology at Kelsey Institute (which became Saskatchewan Polytechnic), and spent the next 20 years running manufacturing companies. The businesses tended to operate on the periphery of the agricultural sector, and it wasn't until 2004 that Ken made his way back to his farming roots with a foray into AgTech that eventually led to his cofounding VeriGrain.

"My passion—and really what I do best—is identify opportunities and solve the challenges that accompany them," he explains. "And where I've seen real potential over the past few years is in the emergence of smart phones, applications, Bluetooth connectivity, and cloud-based storage. Their portability has ushered in a paradigm shift, particularly in agriculture, where mobility is critical. What's funny is that it's been four decades since I last wrote code, yet here I am running an app development company. I can't do the back-end stuff, but I can rely on 40 years of solving client problems to ensure we provide outstanding quality and a seamlessly integrated user experience."

Our focus is bringing consistency to grain sampling through automation, and that's the challenge we've solved. For the first time, a tool exists that allows farmers to provide live, verifiable data regarding the quality of the stored grain they're selling. And it's the explosion of smart technologies that has allowed us to implement real-time data collection and communication, adding significant value all along the supply chain. What we've created is truly ground-breaking. And we have the industry-wide recognition to back up our claim, including the Davidson Prize for innovation, which is awarded annually by the American Society of Agricultural and Biological Engineers. Receiving that was a little like being the small Canadian independent movie filmed on a smartphone that took on the big Hollywood productions and walked away with the Oscar for best picture.

Ken Jackson

Being recognized trail blazers is exciting, but it's not without significant challenges. These include lacking any reference points for the business model, which makes it difficult to attract investors. Then there's the quandary of marketing a unique concept to a customer base inundated with a broad range of decisions. But despite the obstacles, VeriGrain has thrived. CAAIN funding allowed Ken to build the team he needed to refine and scale up his technology. Without the support, the company would not have been able to develop the product to the advanced state it is with the capability of delivering real-time on-farm automated moisture and temperature readings of stored grain. That kind of data is an industry first, and will allow farmers to get top dollar for their grain because buyers can have confidence in the consistency and quality of the product they're purchasing. Momentum is building, and partnerships are in the offing that will expose the sampling technology to 80,000 North American farmers. If VeriGrain attracts only 10 per cent of those as clients at an average annual fee of about $4k to $5k per user, the company will become a remarkable success story three years into its existence, validating both the technology itself and CAAIN's decision to support its development.

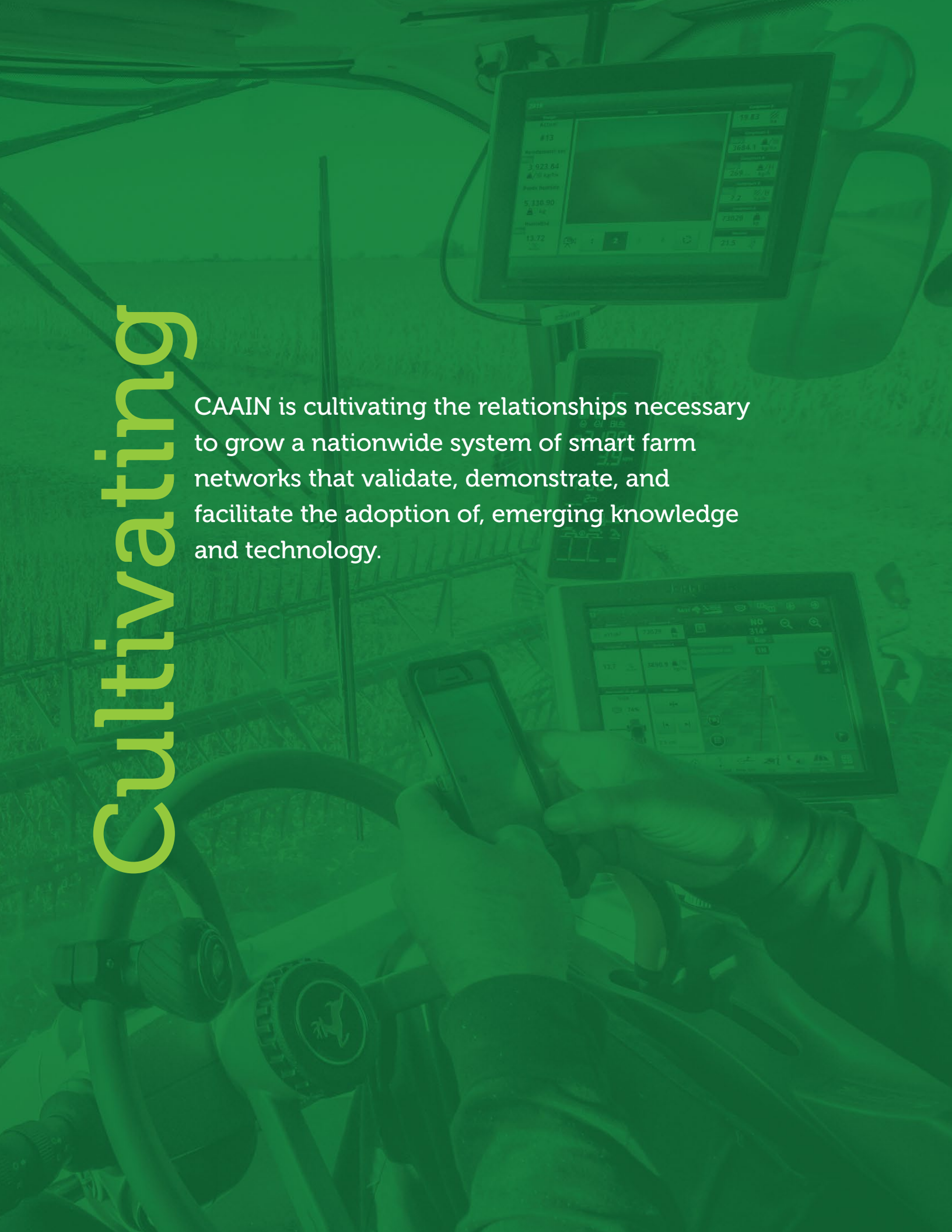
When asked about the future he sees for his technology, Ken pauses before answering. "I guess first it's about building market share in North America, then growing internationally. After that, I think there's the potential to expand from specialty grains like barley, pulse crops, and seed grains to include commodities like wheat and canola. Commodity grains make up 80 percent of the industry, and while there isn't the same value spread you see with the specialty crops, the potential return on investment is still substantial. So, I think we will eventually tap into that market, as well. Ultimately, though, what drives us is knowing our work is important and that we are helping to feed a hungry world. I'm very proud of that."

$693,598
CAAIN Contribution

$1,541,509
Total Project Value

Cultivating

CAAIN is cultivating the relationships necessary to grow a nationwide system of smart farm networks that validate, demonstrate, and facilitate the adoption of, emerging knowledge and technology.



System of CAAIN Smart Farm Networks

What is a Smart Farm?

Commercial or research facility with infrastructure and capacity required to:

- Validate new knowledge or technology including some assessment of ROI
- Demonstrate new knowledge/technology to agriculture community
- Provide learning opportunities

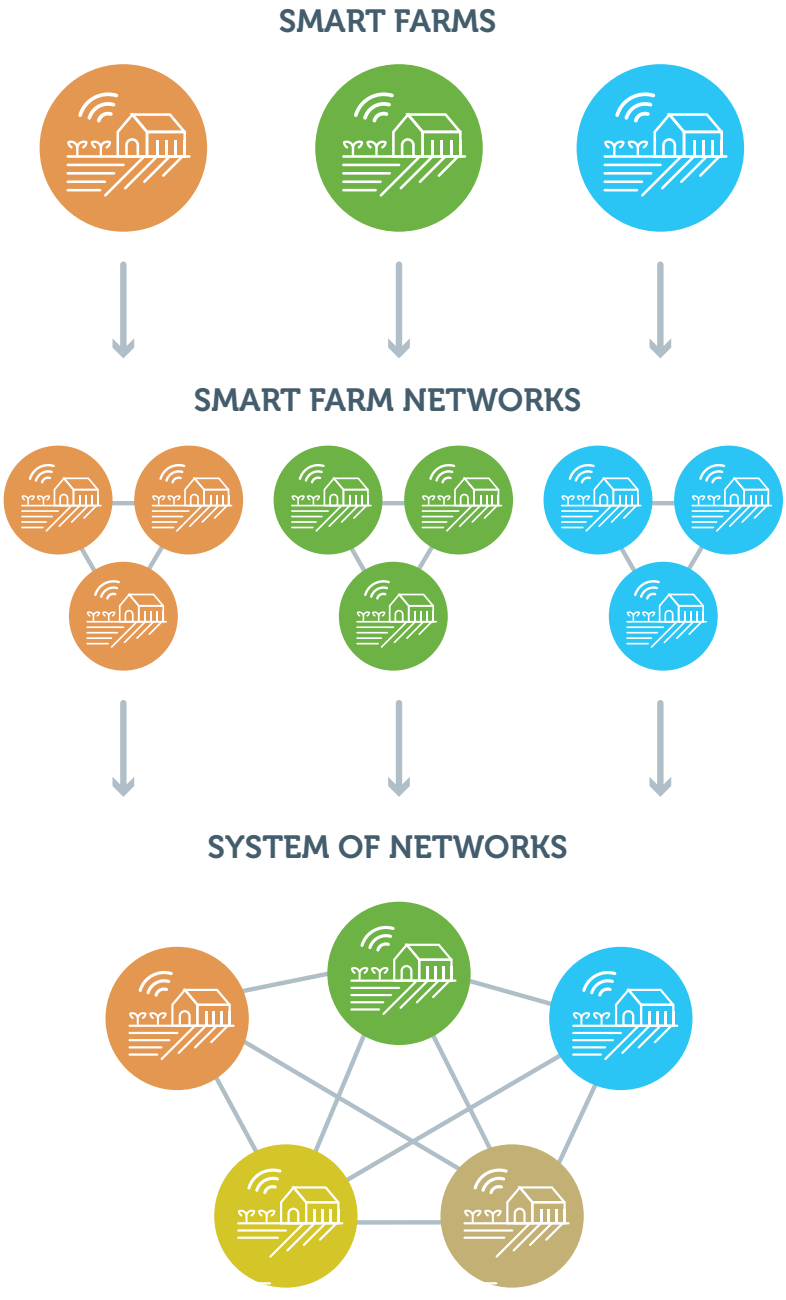
What are Smart Farm Networks (SFN)?

- Collections of smart farms distributed across Canada
- Compare performance under different conditions
- Assessment of knowledge/technology's potential to provide:
  - Increased productivity and profitability
  - Enhanced environmental and/or social value

What is CAAIN's role in the System of SFNs?

- Development and maintenance of the SFN platform
  - RFP issued to identify and retain platform developer
- Address common interests like climate change
- Promote sharing of best practices, access to experts

Smart Farm Networks & System of Networks



CAAIN IS CULTIVATING...

Smart Farm Networks

Dr. Joy Agnew, Olds College of Agriculture & Technology's Vice-President of Research, seems to be a long way from her family farm in rural Saskatchewan. But is she really?

Her father was a big believer in early adoption of technology, and would take her with him to agricultural shows around the Prairies. He was constantly educating himself, to which she attributes her love of learning. That thirst for knowledge propelled her to earn a bachelor's degree and a doctorate, both in Agricultural Engineering, from the University of Saskatchewan, as well as an MSc focused on composting science from the University of Alberta. While finishing her PhD, she did some teaching, which opened her eyes to the enjoyment of sharing knowledge with students and opening their minds to new possibilities and opportunities. Nevertheless, she realized that her primary passion remained applied research, and her subsequent career choices reflect that focus, particularly her current role, which has her leading three CAAIN-supported projects, including The Pan-Canadian Smart Farm Network Development initiative.

What I love about what I'm doing now. Is that I get the best of both worlds. Not only do we have about 60 projects wrapped up in the smart farm envelope, but I also work hands-on with fantastic researchers, teachers, and students. I'm engaged in research while supporting the teaching and training of the next generation. This is my dream job.

Dr. Joy Agnew

Joy is rightfully proud of the progress her team is making. First, there's the growth of the Smart Farm Network itself, which started with three sites, namely Olds, Lakeland College, and the Glacier Farm Media Discovery Farm in Langham, SK. Since then, the partnership has grown to include the University of Saskatchewan and Manitoba Beef & Forage Initiatives. Second, there is the diversity of research in which the five partners are engaged. Some of the projects are stand-alone, others involve multi-site collaboration, but all are focused on improving Canadian agricultural practices and performance.

When asked to single out a couple of her favourites, she pauses to consider her answer carefully. "That's a tough question," she says. "There are so many from which to choose and they're all good, but I am very proud of the projects that the Smart Farm Network team has collaboratively developed and executed. For example, this year we hope to collectively evaluate a new Australian technology that assesses disease risk. That's exciting because we will all be evaluating the same tool, so our combined efforts will yield data relevant across Western Canada. It will also allow the tech manufacturer access to a new market, which in turn grows the credibility and brand value of the Smart Farm Network. Another of our multi-site projects has us determining the ideal field placement of METOS weather stations. That may sound trivial but it's important because if we can figure out optimal locations relative to wind direction and other factors, we can provide guidance that allows farmers to collect the best information possible on which to base their decisions. We are also exploring an initiative that would greatly benefit from the ability to collect data from multiple sites. Specifically, we hope to validate a model that can estimate nitrous oxide (N_2O) emissions from fields using data that growers can already access through their existing equipment. The Government of Canada is seeking to reduce greenhouse gases generated by agricultural activity. But it's very difficult, if not impossible, to directly measure the N_2O released by fertilizer use. We are intent on finding a way to calculate the emissions with some degree of accuracy according to specific criteria. If we succeed, the result will be very useful as we strive to quantify and reduce the cropping sector's carbon footprint."

Another important benefit the Olds College smart farm provides is the hands-on learning available to students. Every year one or two students are offered an on-site work placement focused on using the facility's autonomous vehicle technology. As a result, they become experts with this advanced equipment. Furthermore, all the school's Agriculture and Agronomy students are exposed to activities that build their understanding of, and comfort with, the latest AgTech. That provides them a significant advantage when they graduate. In fact, this kind of education is good for the entire agri-food industry because the agronomists and farm operators who have enjoyed this kind of practical training are the leaders who will help propel Canadian agriculture to the levels of efficiency required to feed a growing global population expected to reach 10 billion by 2050.

Joy is adamant that CAAIN's support of the Smart Farm Network has been essential to its growth and success. The combined land capacity among the five partners is approximately 10,000 acres, 3,600 of which are owned and operated by Olds College. While this bounty gives the teams the space needed to run multiple projects in individual locations, it's the funding that makes the variety and the project activities possible. Without it, they would lack the resources needed to engage in such diverse research, networking, and dissemination. Joy notes that in addition to the massive contribution from CAAIN, several other partners have been instrumental to the success of the Smart Farm Network. In particular, she points to the value added by ATB, UFA, MNP, Glacier Farm Media, and METOS Canada, as well as other public-sector funding from PrairiesCan, NSERC, and Alberta Innovates.

When asked what it is about the Smart Farm Network that gives her the most pride, Dr. Agnew smiles. "This may seem strange, but it's the capacity we're building. This complex, painstaking work requires significant and diverse expertise. Through our efforts and those of our partners we are building the skills and knowledge needed to execute projects that will accelerate the development and adoption of valuable technologies." She pauses. "This is not easy. It's hard to organize and manage diverse activities across a range of sites while ensuring a high level of attention to detail and scientific rigour. But we have individually and collectively completed several dozen projects, and the results have been gratifying. We're learning as we go and are only going to improve as we gain experience and continue building that capacity I mentioned. That makes me proud because I know that by developing the expertise needed to conduct our experiments and validate new technologies, we're directly supporting the Canadian agricultural sector that has been my entire life and that I love so passionately."

It seems Dr. Joy Agnew has not travelled all that far from the family farm after all.

$1,127,193
CAAIN Contribution

$3,383,589
Total Project Value

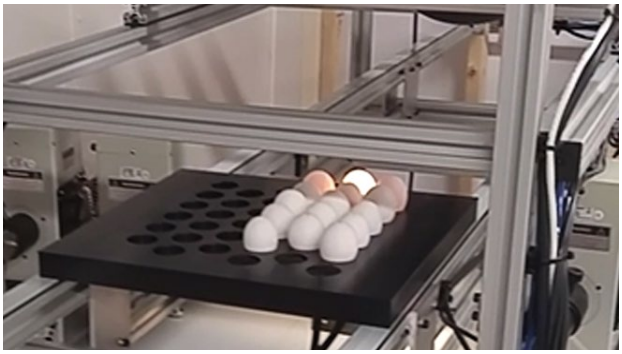
Appendices

PROJECTS AT A GLANCE

Automation

Optimizing Hyper-Eye: Assessing the Fertility and Gender of Pre-Incubated Eggs

Led by Montreal-based MatrixSpec Solutions Inc., the Hyper-Eye project uses a non-invasive blend of hyperspectral imaging, artificial intelligence, and machine learning to determine the fertility and gender of pre-incubated eggs.



Agricultural Autonomous Controls Framework

Led by JCA Technologies, this project seeks to apply an autonomous framework on which to build customized machines, thereby helping OEMs overcome the innovation barrier impeding the development and adoption of their technology.

Artificial Intelligence (AI) Development for Autonomous Agriculture Application

Led by Raven Industries, the project team will work to advance the OMNiPOWER™ Platform by researching and creating various software and AI functions.

Development of Automated Smart Device for Pork Marbling Assessment

Led by MatrixSpec Solutions, this project will develop an upgraded prototype of Marbling Meter, a proprietary automated loin chop marbling assessment tool.

Evaluation and Improvement of Economic, Environmental and Logistical Benefits of Autonomous Agricultural Equipment Operation for Broad-Acre Crop Production

Olds College is testing the Raven Industries' OMNiPOWER™ Platform in real-world conditions to demonstrate and validate its viability in Western Canadian agronomic conditions.

Harvesting Automation: Reducing the Requirement for Highly Skilled Labour During the Harvest of Broad-Acre Cash Crops

This project aims to automate much of the functionality of MacDon Industries' combine harvesters, freeing farmers for more important tasks, and increasing their overall productivity and profitability.

Feasibility of an Autonomous Solution for Optimized Application of Livestock Manure

Led by Haggerty AgRobotics Co., this project will design, test, and document the Raven OMNiPOWER™ autonomous farming system to apply liquid livestock manure in bare/standing fields to enhance efficiency and demonstrate a marketable made-in-Canada solution for handling high volumes of livestock waste.

Project ANT: An Innovative Approach to a Fully Autonomous Greenhouse Mobility Platform

This project aims to validate the design of the ANT logistics mobile platform to solve the complex technical challenges in using multiple classes of robots that cooperate to efficiently delegate tasks and relocate tools around a greenhouse.

Autonomous Tractor Kit for Enabling Autonomous Farm Implement Operation

Mojow is developing the Eye-Box™ Autonomous Tractor Kit, which allows the conversion of conventional tractors to autonomous vehicles, or can be integrated into ready-to-market farm machinery, such as Barnstorm's swarm capable autonomous tractor, to enhance functionality.

Using Automation, Data and Insights to Improve Meat Quality and Safety

Led by Ontario-based P&P Optica, this project seeks to connect the practices of pork producers and processors to the quality of meat produced. This will be done by integrating a wide variety of variables from the plant, the farm, and publicly available sources using artificial intelligence (AI) and machine learning algorithms and analytics to identify predictive and prescriptive trends that will optimize production and improve the quality and safety of meat products in Canada.

PROJECTS AT A GLANCE

Data-Driven Decision-Making

Automating Traceability, Creating a Digital Manifest, and Providing Transport Assurance Via Generic Data Enablers

Led by Transport Genie, this project will introduce accessible, scalable technology offering simple, integrated tracking and reporting to the Canadian live-haul transportation industry.

Advancing Agronomy through Hyperlayer Data Collection and Analytics

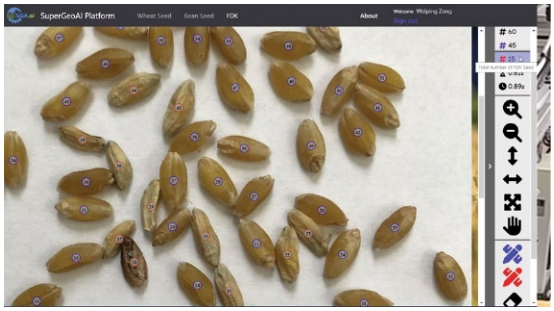
Led by Olds College, this project's overarching goal is to collect data and develop a robust repository of different, validated, high-resolution, geospatial agronomic datasets.

VeriGrain™ Development, Validation, and Commercialization

The goal of this project is to further develop key elements of the VeriGrain tool and validate overall system functionality and integrity, paving the way to eventual widespread commercial application. VeriGrain's technology provides digital tracking and verification of grain samples, affording all parties certainty in the form of a traceable electronic record.

GeoAI Platform for Automating Manual Observation Associated with Wheat Production (Phase 1)

Led by Super GeoAI, a team of agri-food companies and academic institutions will employ diverse technologies to develop a geospatial artificial intelligence (GeoAI) platform proof-of-concept that automates manual wheat-production observations.



GeoAI Platform for Automatically Digitizing and Modernizing Wheat Grain Grading (Phase 2)

This project aims to leverage deep learning, machine vision, geospatial, and high-performance computing technologies to digitize grain grading and automate the laborious manual observation required for wheat production.

Digitizing Fomite Contact Tracing to Mitigate Pathogen Spread in Agriculture

Led by Farm Health Guardian, this project will compare features and capabilities of existing technologies to identify a cost-effective sector-wide technological solution capable of generating real-time track-and-trace data to mitigate the effects of disease outbreaks in the livestock and poultry industries.

Precision Ranching for Improved Reproductive and Grazing Efficiencies

Led by Lakeland College, this project will use sensing technology to identify and evaluate location, activity, temperature, and behaviours that determine cattle fertility.

The Utilization of 3-D Real-Time Multispectral Cameras to Identify the Liveweight, Optimal Slaughter Weight, and Carcass Weight in Pre-Slaughter Cattle

Led by Alpha Phenomics, this project will evaluate and validate the use of various new technologies to provide accurate, real-time assessment of cattle growth, body fat, carcass composition, and industry-specific information on the health and wellbeing of cattle.

Field to Glass - The Next Generation of Barley Traceability

Led by Grain Discovery, this project seeks to build an end-to-end digital system that uses blockchain technology to trace Canadian-grown malt barley through every stage of the value chain. This dovetails with CFIA requirements for food traceability and transparency, and will provide information to increase public awareness and trust by educating shoppers on the products they buy. Lessons learned could be applied to provide similar tracking technology to other agri-food products.

F3: Farm to Factory to Farm - Pea Protein Quality and Traceability

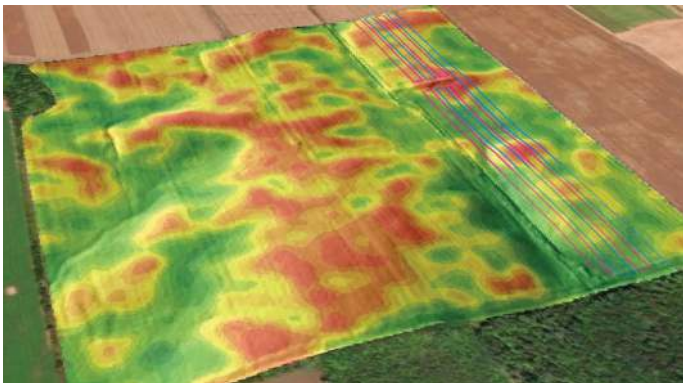
Led by PIP International, this project will build a detailed vendor management and data connecting exchange mechanism between farm, flour mill, and a pea fractionation facility to create an AgTech circular ecosystem that connects farms to the factory and back to the farms.

SoilOptix, Advancing Processes to Predicting Soil Organic Carbon

This project will quantify Soil Organic Carbon by employing topsoil mapping technology that uses the natural emission of gamma radiation from the ground along with standard soil sampling practices within agriculture to build high-resolution soil nutrient, texture, and other property maps.

Automation and Scalability of SWAT MAPS to Advance Canadian Agriculture

Led by Croptimistic, this project will see academic and on-farm researchers, industry players, and smart farm staff collaborate to expand SWAT MAPS's capacity and develop scalable analytics and agronomic validation solutions supporting the widespread adoption of precision agriculture.



Commercialization of IOT and AI for Carcass Cooling to Improve Meat Profitability, Quality and Food Safety

Led by mode40, this project will make use of a Meat Quality Management System using artificial intelligence, mobile technology, and smart sensors for real-time adjustment of the carcass-cooling process.

PROJECTS AT A GLANCE

Smart Farms

Pan-Canadian Smart Farm Network Development

Led by Alberta's Olds College, this project will use a growing network of smart farms across Canada to provide geographically-diverse, real-world validation of the latest agricultural technology.

CAAIN Program Funding Summary

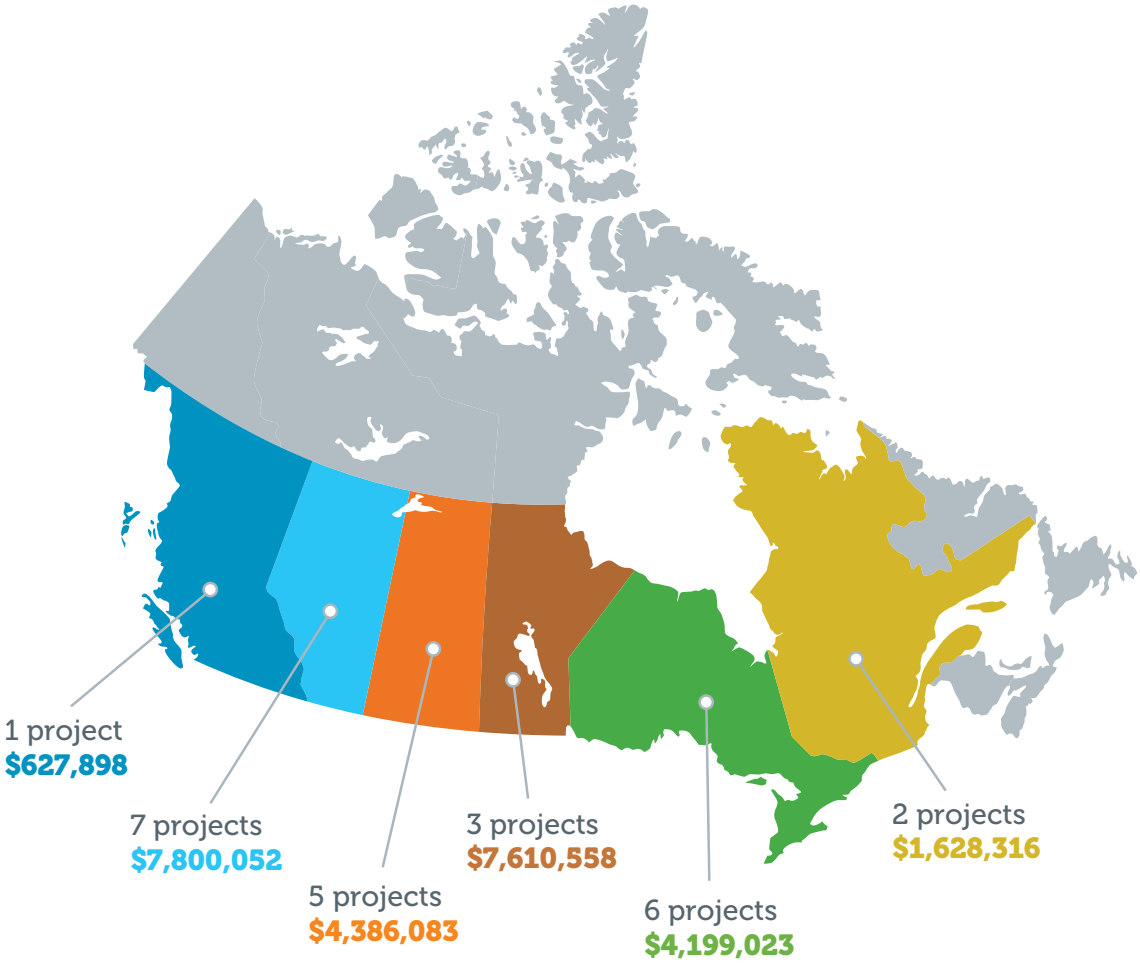
As of April 20, 2023

Program Status	Program Name	Projects	CAAIN $	Industry $	In-Kind	Project Management (4%)	Eligible Not Supported & Ineligible Costs	Total Project Value
In progress	2020 CLOSED	9	$14.3M	$13.3M	$4.1M	$0.5M	$4.2M	$38.6M*
In progress	2021 OPEN	7	$2.9M	$4.2M	$2.8M	$0.3M	$1.1M	$11.3M
In progress	2022 OPEN	6	$5.6M	$8.4M	$0.5M	$0.6M	$3.0M	$18.1M
In progress	Beef & Pork Primary Processing	2	$3.5M	$5.2M	$0.6M	$0.4M	$1.3M	$11.0M
Full Project Proposal	Livestock Innovation	10	$5.0M	$7.5M	$0M	$0.5M	$0M	$13.0M
TOTALS		**34**	**$31.3M**	**$38.6M**	**$8.0M**	**$2.3M**	**$9.6M**	**$92.0M**

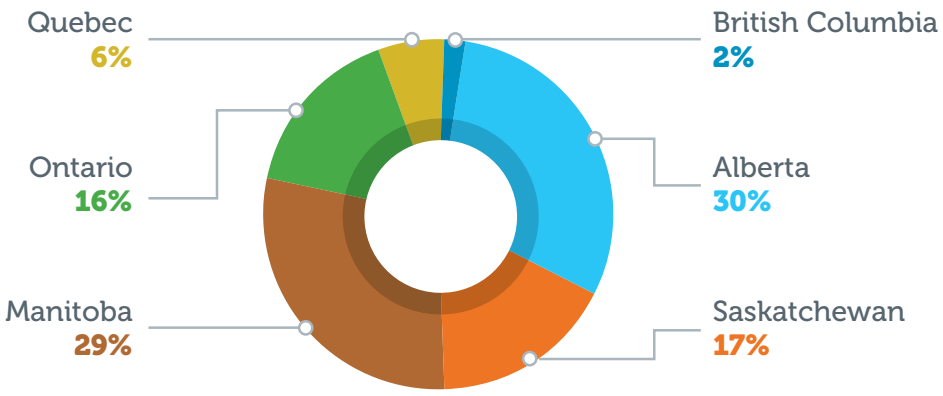
*Includes $2.2M contribution of funds from public programs

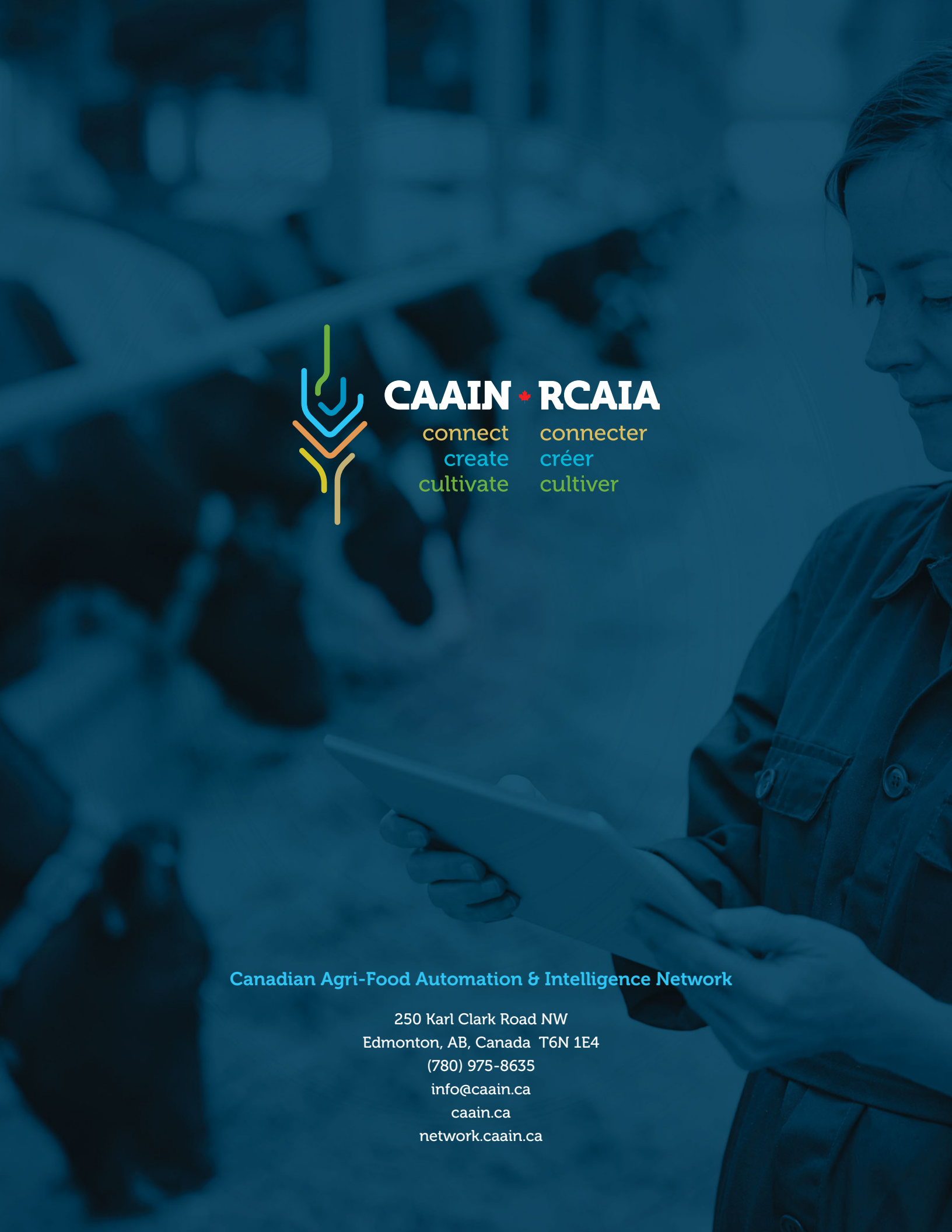
Estimated CAAIN contribution, etc. and total project value if all proposed projects are approved

Geographic Distribution of Project Funding



Aggregated Project Investment by Province ($)





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