Canadian Agri-Food Automation and Intelligence Network (CAAIN)

Technology Development
and
Smart Farm Networks Program

2025 Broadacre Cropping Program

PROGRAM GUIDE

CAAIN · RCAIA

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create créer
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Introduction

The Canadian Agri-Food Automation and Intelligence Network Ltd. (CAAIN) is a not-for-profit organization formed in July 2019 and supported primarily through funding from the Government of Canada's Strategic Innovation Fund (SIF). CAAIN supports the development of new knowledge and technological solutions for the most significant challenges and opportunities facing Canada's agri-food sector through:

1. **Connecting:** CAAIN is the hub connecting the members of a growing Canada-wide agtech ecosystem
2. **Creating:** CAAIN provides funding to the entrepreneurs and researchers creating the innovative agricultural technology that will help Canada's agri-food community overcome its most pressing challenges
3. **Cultivating:** CAAIN has cultivated the environment needed to launch, manage, and grow a nationwide system of smart farm networks that will spur the adoption of agtech, and allow Canada's innovators and entrepreneurs to commercialize their products

CAAIN aims to leverage the advantages created by bringing technology-focused partners together with other, relationship-rich, industry-embedded partners to increase productivity and enhance value.

CAAIN achieves this objective by investing in research and innovation projects that:

1) Advance the development, use, and value of automation and robotics in agri-food production.
2) Support the creation of data-based decision-making tools that can be applied to reduce risk and optimize production.
3) Contribute to the implementation of a smart farm platform that: integrates partners; creates the context for testing, demonstrating, and scaling technologies; and trains tomorrow's workforce.

To achieve impact, CAAIN is focused on engaging high growth companies, both small and large, and connecting these companies with potential post-secondary and not-for-profit partner institutions to accelerate development of new automation, digital technologies, and smart-farm systems.

Investment by CAAIN

<u>Research and Innovation</u>

Stakeholders across the agri-food value chain must adopt new approaches to meet current and upcoming challenges related to key concerns on food security: a changing climate, changing global demographics and anticipated food shortages, food waste, dwindling natural resources such as water, and a finite amount of viable agricultural land. This impact could increase by 50 to 90% between 2010 and 2050 without the intervention of technological advancements and dedicated mitigating approaches.

CAAIN mobilizes Canadian companies, academic expertise, technology developers, and equipment manufacturers, generating focus around the opportunity to pursue precision, productivity, and profitability in the agri-food sector. CAAIN's investments increase the capacity of the innovation ecosystem at the intersection of agriculture, technology development and primary processing. The convergence of multiple sectors creates a unique opportunity to maximize the value-added potential of innovations and drive new growth in ways that may not exist for stakeholders otherwise.

Societal Impact and Employment

CAAIN's investments in the use of digital technologies in agriculture can address concerns around food shortages precipitated by global population growth, climate change and future pandemics. For example, improved tracing through supply chains can lead to less food waste.

Integration of Equity, Diversity, and Inclusion (EDI) are essential to driving innovation, building strong relationships, and introducing best practices to meet the technology needs of the agri-food sector. Diverse perspectives are critical in the ideation of novel solutions to ongoing problems.

CAAIN-supported activities are also expected to result in direct and indirect employment in the technology and agri-food sectors, and to lead to opportunities for skills training in Science, Technology, Engineering, and Math (STEM)-related co-op or Work Integrated Learning (WIL) programs. Development of these Highly Qualified Personnel will ensure that agricultural workers of the future are equipped with the necessary skills to operate and maintain the advanced tools of the farm, maintain cyber safety and security and manage the vast amount of data that can be collected by digital technologies.

Environmental Benefits

Reduction in greenhouse gas emissions (GHG) can be realized through reduced agricultural inputs, improved agri-food efficiency and productivity, and automated solutions that use less energy. Additional environmental impacts can be derived from opportunities to capture carbon as well as broader monitoring and the recognition that market access is greater for primary producers who use farm practices that improve soil conservation/reduce soil erosion, preserve biodiversity, and protect and preserve waterways. Changes to existing practices will be driven by the ability to quantify return-on-investment decisions when comparing existing to new practices.

To achieve impact, CAAIN encourages collaboration among high growth companies of all sizes, post-secondary institutions and not-for-profit partner organizations to accelerate development of new automation, digital technologies, and smart farm networks. CAAIN's overall objective is to leverage the advantages created by combining the relative expertise in agricultural practices and digital technologies to increase productivity and enhance value.

Current Opportunity

CAAIN is committing up to **$3M CAD** in funding to support collaborative activities that will bridge the gap between the development of new innovations in broadacre crop production and their adoption in commercial space. CAAIN is seeking applications for research and innovation projects in the large-scale cultivation of crops on a minimum of 100 acres of land that:

1) Advance the development, use, and value of automation and robotics
2) Support the creation of data-based decision-making tools that can be applied to improve knowledge, reduce risk or optimize production; and/or
3) Contribute to the implementation of a smart farm platform or smart farm networks to support technology adoption through fulsome integration of partners; creation frameworks for validation, demonstration and scaling; and training of a technologically proficient agricultural workforce. (*see **Appendix 1** for a description of Smart Farms and Smart Farm Networks)*

Project Term

Project start dates are dependent upon the date of proposal approval by CAAIN. The process to approve successful projects can take approximately five months from the date of the initial submission to CAAIN. Project expenditures must be completed by **March 31, 2028,** to ensure reimbursement of funds.

Eligibility

The following criteria are the minimum requirements for CAAIN funding:

1. Project teams/networks must be comprised of organizations with operations in Canada. Teams/networks involving multiple stakeholders are encouraged. This may include academic/research institutions, not-for-profit organizations, for-profit entities (SMEs, MNEs), etc. International collaborations are also welcome; however, CAAIN funding can only flow to Canadian entities.
2. Projects must include **cash** contributions from **at least two** small or medium enterprises (SME) incorporated in Canada. SMEs are defined by Statistics Canada as those with 499 or fewer employees and include for-profit or not-for-profit entities.
3. All project partners must be in good standing with CAAIN. This includes having no overdue reporting or monies owed to CAAIN.
4. Proposal objectives must be consistent with those of CAAIN and of the ISED Strategic Innovation Fund Stream 4 (https://www.ic.gc.ca/eic/site/125.nsf/eng/00007.html).
5. The initiative must be incremental to the regular business of project team member organizations, meaning that:
    a. Financial commitments are distinct from investments that would otherwise occur
    b. The project is new or would not be undertaken at the same scope or scale without the support of CAAIN funding
6. Project teams/networks commit to sharing widely the results of all technology assessments supported by CAAIN and uploading research and evaluation results onto a CAAIN-led or CAAIN-managed software platform.
7. Project teams/networks commit to promoting the CAAIN brand in association with a smart farm or smart farm network.
8. Former and current funding recipients of CAAIN are welcome to apply.

To be considered for CAAIN funding support, all proposals must meet the following criteria:

- Be developing a digital technology or operating a Canadian smart farm focused on a broadacre cropping system which **addresses a specific Canadian agricultural opportunity**. This may include, but is not limited to, the following:
    - Indigenous-focused broadacre cropping
    - Improved production efficiency
    - Energy efficiency
    - Agricultural food quality and safety
    - Transportation
    - Traceability

- Eligible crops include grains (wheat, corn, barley, oats), beans, pulses, oilseeds, fruits, vegetables and forage (hay and swath). **Applicants should note that all activities should cover a land size of a minimum of 100 acres, at one or several (combined) locations within Canada. Applicants may reach out to CAAIN program managers to inquire about crops not listed in this document.**

- Have available the knowledge and skills necessary to evaluate and publicly report on the economic, social, and/or environmental benefits provided by the technology or knowledge being evaluated, including, but not limited to:

    - Improved operator decision-making
    - Reduced reliance on costly unskilled labour
    - Precise use of agricultural inputs
    - Improved production of value-added crops
    - Improved land use
    - Reduced water use/Irrigation
    - Reduced greenhouse gas emissions
    - Enhanced carbon capture

- Have interest in, and be capable of, empirically validating the use of the latest knowledge and emerging technology relevant to the proposed project, including an assessment of potential economic value

- Commit to sharing high-quality, verifiable evaluations of emerging technologies with the agtech community

- Commit to demonstrating the latest knowledge and emerging technology implemented or tested on the farm to Canadian agricultural producers, researchers and communities

- Commit to providing a high-level summary of datasets generated during the project for publication in the CAAIN directory

- Commit to contributing a high-level summary of intellectual property generated to the CAAIN IP directory

- Provide learning opportunities contributing to the development of a skilled workforce

- Commit to sharing research and/ or demonstration data using a common structured format with CAAIN. This data, **when anonymized**, will be owned by CAAIN

- Commit to using CAAIN's data collaboration and management platform, including providing Application Programming Interfaces (APIs) necessary for data integration. (for activities involving smart farms & networks)

- Commit to keeping resultant (foreground) IP and data in Canada for a minimum of 5 years from project from project completion.

Note to Applicants:

- CAAIN may share application titles with other funding agencies confidentially to avoid overlap of funding or identification of additional resources
- All funding decisions by CAAIN are final and not appealable

Selection Criteria

Proposals will be evaluated based upon the following criteria:

Technical merit:
The innovation concept must be scientifically sound and show movement of at least one Technology Readiness Level (TRLs, *see* ***Appendix 2***) through TRLs 1-7 (with an emphasis on TRL3-7) that could be commercialized, or more widely adopted in Canada.

Breadth and knowledge of the team/network members:
Project members and partners will ideally encompass multiple applicable representatives of the agricultural product value chain as well as having the collective expertise to evaluate technologies from a variety of perspectives.

Economic and Social Benefits to Canadian agtech and agriculture:
Projects should create future value for the agriculture sector in Canada and not just for its immediate members. Proposals should articulate how the project activities will lead to adoption of innovation. Teams and networks spanning regions across Canada or bridging gaps within localized regions should be emphasized (*see* ***Appendix 3***).

Training opportunities:
Proposals should outline all opportunities for experiential learning. This may include individual opportunities or formal programs (e.g. co-op, Work Integrated Learning) targeting students, or upskilling/reskilling agriculture industry workers.

Budget:
Proposal expenditures must be reasonable for the particular industry, appropriately justified and adhere to CAAIN Costing principles (*see* ***Appendix 4***).

Scope of Funding

Successful applicants will be awarded **up to $600,000 CAD** for project execution.

CAAIN will reimburse projects up to **40%** of the **Total Eligible Supported Expenses**.

All funded initiatives are subject to a 4% administration fee.

CAAIN will match only unencumbered cash contributions to the project for eligible supported expenses. CAAIN will not match:

- Financial contributions from governmental sources (including post-secondary institutions)
- In-kind contributions (however, these are considered to be important indicators of team commitment and likelihood of success. Relevant contributions should be assessed at fair market value.)
- Future revenue associated with the outcomes of the project such as tax incentives associated with the project (e.g. Canadian SR&ED credits)
- The value of shares paid in lieu of cash contributions
- Revenue from sales of the project's end-products
- Non-eligible contributions (*see* ***Appendix 4****)*

However, the presence of these revenue sources should be noted in the application, as the merits of these contributions will be taken into consideration during the evaluation. Applicants must justify the amount of funding requested to CAAIN, whose reviewers may choose to approve the project but award less funding than requested.

For information on eligible supported expenses and costs, please refer to the CAAIN Eligible Expenses and Cost Instructions in ***Appendix 4***.

Deadlines and Timeline

CAAIN will not accept partial, incomplete, or late submissions. Applicants are encouraged to complete their submissions well in advance of the deadline.

The 2025 Broadacre Cropping Program was opened on May 5th, 2025. It is open to receiving applications on a continuous basis until CAAIN chooses to close the competition. CAAIN, at its sole discretion, reserves the right to alter this schedule. The following table provides a timeline example for Project Application Forms received.

Application Stage	Date
Initial Project Application Form (PAF) deadline	Open Intake
Invitation to submit EOI	5 business days after PAF submission
Expression of Interest (EOI) deadline	6 weeks after EOI invitation
Invitation to submit FPP	3-5 weeks after EOI submission
Full Project Proposal (FPP) deadline	6 weeks after FPP invitation
Final decision	6-8 weeks after FPP submission
Project completion	March 31, 2028

Application Stages

This competition is comprised of three stages:

1. **Project Application Form (PAF):** Lists the criteria and eligibility requirements, providing applicants and their project partners a clear understanding of the competition's parameters.
2. **Expression of Interest (EOI):** Allows applicants to provide an outline of proposed activities with some general details. Submissions at the EOI stage of the competition is by invitation only; no unsolicited EOIs will be accepted.
3. **Full Project Proposal (FPP)**: Applicants proposing exceptional projects are invited to submit a full proposal which will include a detailed project description, a full financial workbook and all supporting documentation. Submissions at the FPP stage of the competition is by invitation only; no unsolicited FPPs will be accepted.

STAGE ONE – Project Application Form (PAF)

The **Project Application Form (PAF)** is intended to facilitate development of funding applications. The PAF outlines the expectations of project applicants and teams and provides context for CAAIN staff to assist

applicants in developing a successful proposal. The PAF also allows CAAIN to ensure that proposed activities align with program goals.

Applicants must clearly align their proposals to CAAIN's priorities for this funding competition. The proposal description should outline the problem to be addressed and the specific objectives and expected outcomes. Applicants should also review the eligibility criteria carefully to ensure that proposals and networks qualify for funding.

Successful applicants will be invited to submit an Expression of Interest (EOI).
Please note that this is a competitive process. There is no assurance that applicants submitting a PAF will be invited to move onto the next stage or that applicants will be successful at any stage of the competition

Applicants will be notified by e-mail that their submission has been received.

STAGE TWO – Expression of Interest (EOI)

The **Expression of Interest (EOI)** allows applicants to describe the proposed activities in greater detail**,** including the rationale, background information and planned development toward commercialization or adoption. Project partners and budgets do not need to be finalized at this stage but some discussion of both to support the project objectives and likelihood of success are required.

EOIs are critically assessed by CAAIN's Technology and Science Advisory Committee (TSAC); successful applicants will be invited to submit a Full Project Proposal (FPP).

Please note that this is a competitive process. There is no assurance that applicants submitting a PAF will be invited to move onto the next stage or that applicants will be successful at any stage of the competition

Applicants will be notified by e-mail that their submission has been received.

STAGE THREE – Full Project Proposal (FPP)

Applicants who are invited to this stage will be notified by email and be provided the FPP form as well as the critical reviews from the EOI stage to guide the preparation of the application.

The FPP includes:

- A one-page, non-confidential summary of the project (to be published only if the project is approved)
- A description of the problem(s) or opportunity to be addressed by the project
- A description of how the project aligns to CAAIN priorities and objectives
- A listing of the key project team members and their anticipated contributions
- A description of the proposed project's major objectives, deliverables, and outcomes with analysis of the customer's willingness to adopt the proposed solution
- A detailed description of the project design and work plan, including quarterly milestones, by fiscal year (April 1 to March 31)
- Details of the expected investment from CAAIN and the required industry contributions
- Identification of any sub-contractors or consultants involved in the project
- Strategies for project management, intellectual property, data management, commercialization/knowledge transfer to potential end users, as well as cyber hygiene

- Identification of risks and barriers to completion, including commercialization, as well as corresponding measures for mitigating those impediments to success
- All declarations of financial commitment to the project

The full proposal should clearly and completely communicate the project, and in the case of a smart farm network, the long-term value of the network.

All FPPs and detailed financial workbooks will be reviewed confidentially by CAAIN staff and academic and industry experts, then assessed by CAAIN's Technology and Science Advisory Committee (TSAC) as applicable. Final funding decisions will be made by CAAIN's Board of Directors.

Details of the evaluation criteria will be communicated to applicants invited to the FPP stage.

Applicants will be notified by e-mail that their documentation has been received.

Funding Decision

Final funding decisions will be made by CAAIN's Board of Directors. Applicants will be notified if, for any reason, the notice of decision is delayed.

CAAIN has sole and unfettered discretion over its funding decisions. This includes but is not limited to the decision to fund or not fund, or the amount, timing, and terms attached to such funding. **All decisions of CAAIN, including but not limited to the decision to fund or not fund, are final, binding on the Applicant, and non-appealable.** CAAIN is not a public body or government agency. It is not an administrative agency, commission, or tribunal, and as such its decisions are not subject to judicial review.

CAAIN receives a large volume of applications for a limited pool of funding. Applicants acknowledge and agree that a proposal may not be selected for funding support even if it meets minimum requirements and/or satisfies other eligibility criteria. CAAIN may decline to evaluate the application at any time for any reason. CAAIN also has the right, as determined in its sole and absolute discretion, to impose a life- time limit on the number of applications any applicant may submit.

Execution of Project Funding Agreements (PFA)

Successful applicants will be required to enter into a **Project Funding Agreement (PFA)** with CAAIN that will detail all funding terms and conditions. The PFA must be fully executed **before** project activities can proceed and expenses may be incurred for reimbursement. The PFA will include:

- Roles and responsibilities of each participant
- Costing principles and limits of combined public fund contributions to the project
- Limits on work outside of Canada
- Monitoring and reporting (project progress and finances) requirements including the need to maintain proper and accurate accounts for up to seven years after completion of the project
- Circumstances leading to a request for repayment
- Disposal of assets acquired during the project
- The right to audit
- Confidentiality and conflicts of interest
- Data management and intellectual property ownership
- Communications stipulations

- Compliance with all applicable legislation
- Indemnification
- Other elements and material normally found in research and innovation project agreements

The Full Project Proposal, Eligible and Ineligible Expenses, and Milestones and Reimbursement will be included as schedules to the Project Funding Agreement.

Reporting Requirements and Performance Management

Funding recipients will be required to report on project outcomes, achievements, and deliverables, including and without limitation, job creation, and technology deployment, as well as environmental, economic, and social benefits. As a results-driven organization, CAAIN uses a performance management framework to monitor and evaluate the outcomes and impacts of its investments and must report the same to ISED. All investment agreements outline the intended outcomes of the project and the corresponding performance indicators (measures) that will be tracked over the course of the project. The Project Team is responsible for reporting on all required indicators to CAAIN by means of quarterly, and final reports, as well as surveys. Failure to complete these reports or surveys as outlined in the PFA, or through any outcome surveys CAAIN conducts, may also delay reimbursement of eligible supported project costs. Significant delays may result in termination of the PFA and/or reimbursement of associated dollars already paid by CAAIN.

CAAIN is committed to encouraging widespread knowledge and technology transfer from funded projects to maximize the benefit of our participation. In addition to quarterly written reports and financial reports, CAAIN may require successful applicants to commit to specific activities such as hosting knowledge-sharing workshops or participation in CAAIN events. CAAIN employs an active project management approach, and over the life of a project will regularly monitor performance and support the Project Team's efforts to achieve its outcomes. Reimbursement of expenses is tied to those outcomes and is dependent on the timely submission of accurate and comprehensive progress, performance, and financial reports. This means when Project Team members incur project costs, their Project Lead is expected to generate a progress report complete with supporting financial documentation (i.e., financial report, invoices, and related explanation) before CAAIN will release funds.

Once projects are completed, CAAIN will continue to monitor performance for an additional period of five (5) years to accurately evaluate the economic, environmental, and social benefits realized for Canadians and the agri-food industry, as well as to allow CAAIN to better understand and communicate the longer-term outcomes of funded projects, commercialization of the technology innovations, follow-on investment attraction, and the environmental and economic impacts of the network programming to ISED Canada. Depending on the significance or impact of Project outcomes, this reporting period may be extended by up to two additional 2.5-year increments (reporting to 7.5 years and potentially to 10 years after Project completion). This performance monitoring also enables the identification of potential opportunities for future projects to help achieve commercial success or make connections for the benefit of the technology and agri-food sectors.

Data and Intellectual Property Sharing

CAAIN strongly encourages the sharing of data and intellectual property between project partners and CAAIN to contribute to the sustainability and value of the network to its members and to Canadian agriculture. Applications will be assessed on a competitive basis to identify those projects that will provide strong collaboration and resource-sharing potential among CAAIN members. This includes data migration, transformation, and revenue generation as many innovations will benefit from the aggregation of data from multiple sources. Applicants agree to provide non-confidential descriptions of intellectual property and data generated by funded projects that will be shared with CAAIN's member network. CAAIN members may then seek collaboration through direct agreements with the owner.

Guidelines for Communications

All CAAIN funding recipients must provide a non-confidential summary of the project, including its total value and expected outcomes that will be used by CAAIN for public disclosure. Recipients also agree to participate in CAAIN's promotional activities and media events as requested.

All announcements regarding CAAIN investment must be coordinated with and approved by CAAIN prior to being released.

Further Assistance

Current information and news about CAAIN's funding programs can be found at: www.caain.ca.

Inquiries on CAAIN programs may be directed to: info@caain.ca.

Appendices

Append x 1 – Smart Farms and Smart Farm Networks

Creating a smart farm platform is central to the ability of CAAIN to deliver on the potential created by converging the agriculture, equipment-manufacturing, food-processing, advanced-manufacturing, and technology sectors.

Smart farms offer the physical context for the integration and application of new technologies. The platform offers a window to the tangible value that integration creates. Building a national network of smart farms that together represent complete agri-food value chains is essential for:

- Testing and validating new technologies across Canada's various agroclimatic conditions
- Creating a context to demonstrate regionally-specific applications
- Educating a workforce at the edge of an evolving sector

Development of a network of smart farms across Canada is expected to facilitate validation of emerging technologies or services, demonstration of regionally-relevant technologies or services to local agricultural producers, and provision of educational opportunities for the next generation of farmers.

Smart Farms

CAAIN defines a smart farm (also known as future farms or innovation farms) as being a commercial, educational, or research farm, or agricultural facility where the latest knowledge and/or technology can be evaluated in a relevant environment to determine their ability to improve agricultural productivity and profitability. Smart farms are also ideal locations for demonstrating the capacities of new innovations and are well suited to support the training and development of a technologically capable agricultural workforce of tomorrow.

Smart Farm Networks

CAAIN defines a smart farm network as being a collection of smart farms or group of organizations with complementary knowledge and expertise to support a smart farm, and whose outcomes as a whole are greater than the sum of its parts. Individual smart farms have an interest or commitment to initiating or continuing the evaluation of the latest knowledge and/or emergent technology to determine its ability to improve agricultural productivity and profitability. Singly, they are valuable tools. When connected and collaborating, they have the potential to drive the validation, demonstration, and eventual adoption of important agri-food research and innovation. Smart farm networks allow members to focus on individual pieces of a larger puzzle, while collaborating with other members within the network to:

- Share best practices
- Leverage the skills and resources across the value chain to solve problems collaboratively
- Gather and share data on the knowledge and/or technology being validated and demonstrated, generating a better understanding of how they respond to different conditions; such information would provide significant value to manufacturers and potential users
- Demonstrate specific knowledge and/or technology to a larger audience of farm operators, thereby potentially accelerating and expanding their adoption
- Evaluate and compare a variety of competing technologies to determine which offers the greatest potential economic value

- Offer opportunities for learning in multiple facilities, thereby broadening a knowledge base and deepening professional understanding

The CAAIN Smart Farm Network program intends to:

- Provide Canadian agricultural producers and innovators an unbiased assessment of how agtech innovations can benefit their farms
- Provide a platform for smart farms or smart farm networks to evaluate emerging agricultural technologies under commercial conditions
- Promote the adoption of new agricultural technologies that will benefit the competitiveness and profitability of the Canadian agricultural sector
- Foster mutually beneficial collaborations between Canadian smart farms through sharing of best practices and leveraging of complementary knowledge and expertise
- Foster collaboration between organizations in Canada's wider agtech community
- Build CAAIN's data collaboration and management platform, including Application Programming Interfaces (APIs) necessary for data integration.
- Support the growth of new companies, scale up efforts, and talent creation in Canada
- Create experiential learning opportunities in building the skilled agtech workforce
- Build a repository of research and evaluation data that can be anonymized and shared among smart farms and, possibly, the broader research community

As part of this competition, CAAIN will support the smart farm's or smart farm network's evaluation of specific Canadian-based technologies of the network's choosing. Evaluations must consider the scientific, technical, economic, environmental and social benefits of the emerging agricultural technologies within a Canadian perspective.

Appendix 2 – Technology Readiness Levels (TRL)

Technology Readiness Levels (TRL) is a measurement system that has been developed to assess the maturity level of a particular technology. There are nine Technology Readiness Levels (TRL), with TRL 1 being the least ready for commercialization and TRL 9 being ready to be used in real-life conditions. To be eligible for CAAIN funding all projects must include components between TRL 5 and 7.

Technology Readiness Level	Description
TRL 1—Basic principles observed and reported	Lowest level of technology readiness. Scientific research begins to be translated into applied R&D. Examples might include paper studies of a technology's basic properties.
TRL 2—Technology concept and/or application formulated	Invention begins. Once basic principles are observed, practical applications can be invented. Applications are speculative, and there may be no proof or detailed analysis to support the assumptions.
TRL 3—Analytical and experimental critical function and/or characteristic proof of concept	Active R&D is initiated. This includes analytical studies and laboratory studies to physically validate the analytical predictions of separate elements of the technology.
TRL 4—Product and/or process validation in laboratory environment	Basic technological products and/or processes are tested to establish that they will work.
TRL 5—Product and/or process validation in relevant environment	Reliability of product and/or process innovation increases significantly. The basic products and/or processes are integrated so they can be tested in a simulated environment.
TRL 6—Product and/or process prototype demonstration in a relevant environment	Prototypes are tested in a relevant environment. Represents a major step up in a technology's demonstrated readiness. Examples include testing a prototype in a simulated operational environment.
TRL 7—Product and/or process prototype demonstration in an operational environment	Prototype near or at planned operational system and requires demonstration of an actual prototype in an operational environment (e.g., in a vehicle).
TRL 8—Actual product and/or process completed and qualified through test and demonstration	Innovation has been proven to work in its final form and under expected conditions. In almost all cases, this TRL represents the end of true system development.
TRL 9—Actual product and/or process proven successful	Actual application of the product and/or process innovation in its final form or function.

Appendix 3 – Benefits to Canadians

Applications will be assessed on a competitive basis to identify those projects that will provide strong benefits as outlined below, and that also best demonstrate a commitment to further developing the technology for potential commercialization or research purposes.

- *Innovation Benefits*
  The proposed project's expected contribution towards the enhancement or development of new industrial or technological innovations. Assessment factors may include potential spillover benefits, creation of intellectual property, patents filed, impact on productivity of the new technology, and number of journal publications.

- *Economic Benefits*
  The proposed project's forecasted impact on the growth of Canadian firms, clusters and supply chains, as well as its expected benefits for Canada's workforce. Assessment factors may include number of new businesses and jobs created, the resulting number of high-paying jobs, and project-related revenue growth.

- *Public and Social Benefits*
  The project's expected contribution to the broader public good, including inclusive business and hiring practices, such as gender balance, investment in skills and training, and environmental best practices. Assessment will consider the degree to which the applicant demonstrates that the project is expected to generate social, environmental, health, security, or other benefits to Canada. Assessment factors may include project-related environmental benefits, investment in local communities, and project-related impact on Indigenous communities. Potential impacts could include:
    - Development of highly qualified personnel
    - Investment in STEM-related co-op or WIL programs
    - Promotion of EDI in hiring, training processes and business practices
    - Integration of technology access in remote and under-represented regions,including Indigenous lands
    - Reduction of greenhouse gas emissions
    - Achievements toward the United Nations' Sustainable Development Goals
    - Improvement of soil conservation
    - Preservation of biodiversity
    - Protection and preservation of waterways
    - Improvement of the health and security of Canadians

Appendix 4 – Guidelines for Eligible and Ineligible Costs

1. Eligible Costs

Eligible Costs incurred and paid by the Project Lead are those, which are necessary to carry out the approved project activities. These costs are generally non-recurring and incremental to the ordinary business activities of the Project Lead. Eligible Costs shall be reasonable, such that the nature and the amounts do not exceed what an ordinary prudent person would conduct in a similar business context and can be directly attributable to the completion of the Approved Project Activities included in the Project Funding Agreement. These costs must be determined in accordance with the Project Lead's cost accounting practices as accepted by CAAIN and the Minister of Innovation Science and Economic Development (ISED) and applied consistently over time. The cost accounting system should clearly establish an audit trail that supports all costs claimed.

2. Affiliated Persons Clause

Affiliated Persons are to be understood and treated as defined in the *Income Tax Act,* which includes but is not limited to; two or more entities that have similar ownership personnel; or entities that have a working business relationship.

In the case of Eligible Costs for goods or services incurred and paid with an Affiliated Person, the amount of the costs incurred and paid must:

i. not exceed their fair market value
ii. in the case of a good or service for which there is no fair market value, the amount must not exceed the fair market value of similar goods
iii. in the case of a good or service for which there is neither a fair market value nor similar goods, the amount must not exceed the sum of the applicable Direct Costs with Indirect Costs (Overhead) at the rate stipulated by the Project Agreement, plus 5% profit

**Note: Project Leads must self-identify any related parties or Affiliated Persons who will be contracted to provide goods or perform services for completion of Approved Project Activities. For wholly owned subsidiaries of the Project Leads completing Approved Project Activities, its Eligible Supported Costs incurred and paid will be claimed by the Project Lead on their behalf and costs are to be treated as if the wholly owned subsidiary is the Project Lead.*

3. Reporting Responsibility

The Project Lead is responsible for providing financial records, costing methods, management estimates and legitimate business causes to support the claimed costs to the satisfaction of CAAIN and ISED.

4. Eligible Cost Activities

Eligible Costs will generally include expenditures related to the following activities:

i. Industrial research, including activities related to the discovery of new knowledge that aim to support the development of new technology-driven products, processes or services at early-stage technology readiness levels
ii. Large-scale technology demonstration, including the advancement and development of new technologies into product-specific applications at mid-to-late-stage technology readiness levels

5. Eligible Cost Categories

Eligible Cost categories of Approved Project Activities may include the following:

A. **Direct Labour:** The portion of gross wages or salaries incurred and paid by the Project Lead for eligible activities which can be specifically identified and measured as having been performed for Approved Project Activities and which is so identified and measured consistently by the Ultimate Recipient's cost accounting system. The cost accounting system should clearly indicate the allocation of an employee's hours worked on the Approved Project Activities.

B. **Subcontractors and Consultants:** The costs of subcontracts or consultants incurred and paid for work or services performed by an external third party or affiliate (except a wholly owned subsidiary), which can be specifically identified and measured as having been incurred and paid for the Approved Project Activities. The Project Lead cannot be a Recipient and a Subcontractor on the same Approved Project.

   The Indirect Cost (Overhead) rate calculation for Project Leads does not apply to bona fide Subcontractors and Consultants.

   ** In the case of Recipients with high Subcontractors and Consultants costs or low Direct Labour costs: Indirect Costs (Overhead) thresholds calculated to a maximum of 5% on eligible Subcontractors and Consultants costs, but no more than 15% of total Eligible Costs may apply. Such thresholds would be calculated for each Recipient and each individual Eligible Project if more than one Eligible Project is selected for a Project Lead.*

C. **Direct Materials & Supplies:** The cost of materials which are incurred and paid for and can be specifically identified and measured as having been processed, manufactured, and used in the performance of the Approved Project Activities, which are measured consistently by the Project Lead's cost accounting system.
   a. Materials purchased solely for the Approved Project Activities shall be at the net laid down cost to the Project Lead, net of any sale taxes and after any discounts offered by the suppliers.
   b. Materials issued from the Project Lead's general stocks shall be measured in accordance with the material pricing method consistently used by the Project Lead.

   Direct Materials may include, but are not limited to, items such as circuit boards, cables and metals, or any raw material that is consumed during Approved Project Activities.

D. **Equipment:** The capital cost of Equipment, which is incurred and paid for and can be specifically identified as having been purchased for Approved Project Activities and measured consistently by the Project Lead's costing system. Significant Equipment required to complete the Approved Project Activities should be detailed in the Project Funding Agreement. Common scenarios of equipment-related costs are:

   i. If the Project Lead builds the equipment themselves, the costs are allocated to the appropriate cost categories (Direct Material, Direct Labour, etc.).

   ii. If the equipment is built by a third party, the costs are allocated to the Equipment category if readily identifiable, otherwise the equipment could be reported in the Subcontractors category.

   iii. If the Project Lead purchases equipment outright, the costs are allocated to the Equipment category.

Capital equipment acquired under the Agreement will be subject to CAAIN and ISED approval for disposal and repayment may be triggered if sold.

Equipment costs may include but are not limited to, the purchase of equipment necessary for the Approved Project Activities, costs to alter or modernize existing equipment, costs to bring equipment into working order, and shipping costs.

Intellectual property & Other Direct Costs: Eligible direct costs not falling within the categories of direct cost mentioned above, but which are incurred and paid, and can be specifically identified and measured as having been incurred and paid by the Project Lead for Approved Project Activities and which are so identified and measured consistently by the Project Lead's costing system.

Travel and Outreach Costs: Eligible direct costs incurred and paid by the Project Lead that are directly related to Approved Project Activities. Travel expenses must be appropriate, and reasonable. Travel costs may be claimed, to the maximum allowance, as per the conditions in the national joint council directive or treasury board policies.

The Project Lead's travel policy may be required for review by CAAIN and ISED during the claim process.

6. Indirect Costs (Overhead)

Indirect Costs (Overhead) are those which, though necessarily having been incurred and paid by the Project Lead for the general conduct of the business, cannot be identified and measured as directly applicable to the carrying out of the Approved Project Activities.

Indirect Costs (Overhead) may include, but are not limited to:

a. Indirect materials and supplies including but not limited to, supplies of low-value, high-usage and consumable items, such as paintbrushes and safety supplies, which meet the definition of Direct Material costs but for which it is commercially unreasonable, in the context of the activities of the Approved Project, to account for their costs in the manner prescribed for Direct Costs. Costs such as stationery, office supplies, postage and other necessary administration and management expenses, small tools, such as ladders, drills, paint sprayer, and general inventory build-up;

b. Indirect labour, Project Administration Fees, and administrative support, including but not limited to the remuneration of executive and corporate officers, general office wages and salaries, clerical expenses, HR, Accounting/Finance staff, overtime premiums, bonuses, all types of benefits paid by employers (e.g., CPP, EI, fringe benefits, medical and dental benefits, pension benefits and other taxable benefits).

Administration costs spent on the following activities are considered Indirect Costs (Overhead):

i. Review and approval of documents
ii. Oversight
iii. Quality review
iv. Strategic guidance
v. Participation in all-staff meetings
vi. Professional development

vii. Performance reviews and any costs associated with interactions with government including application
viii. Claims
ix. Amendment
x. Audit and reporting communications

Notwithstanding the above, Indirect Costs will not include those Direct Labour costs described in Section 5.A.

c. Indirect building costs including, but not limited to, snowplowing costs, public utilities expenses of a general nature including but not limited to, power, HVAC, lighting, and the operation and maintenance of general assets and facilities;
d. Expenses such as property taxes, rentals of equipment and building (not covered as part of direct costs) and depreciation costs;
e. Indirect equipment costs including, but not limited to, maintenance cost of assets, office equipment, office furniture, etc.; and
f. Other Indirect Costs including, but not limited to, daily commutes, unreasonable modes of transportation, general software and licenses, and travel insurance

Indirect Costs (Overhead) thresholds of 55% on eligible direct labour but no more than 15% of total Eligible Costs will apply for each Ultimate Recipient (and for each individual Eligible Project if more than one Eligible Project is selected for an Ultimate Recipient).

* In the case of Recipients with high Subcontractors and Consultants costs or low Direct Labour costs: Indirect Costs (Overhead) thresholds calculated to a maximum of 5% on eligible Subcontractors and Consultants costs, but no more than 15% of total Eligible Costs may apply. Such thresholds would be calculated for each Project Lead and each individual Eligible Project if more than one Eligible Project is selected for a Project Lead).

7. Ineligible Costs

Ineligible Costs incurred and paid by the Project Lead are not eligible for reimbursement by CAAIN, regardless of whether they are reasonably and properly incurred and paid in the carrying out of the Approved Project Activities.
Ineligible Costs include:

(a) Any form of interest paid or payable on invested capital, bonds, debentures, bank or other loans together with related bond discounts and finance charges; the interest portion of the lease cost that is attributable to cost of borrowing regardless of types of lease

(b) Legal, accounting and consulting fees in connection with financial reorganization (including the set-up of new not-for-profit organizations), security issues, capital stock issues, obtaining of licenses, establishment, and management of agreements with Ultimate Recipients and prosecution of claims against CAAIN and the Minister. Such legal costs associated with developing the agreement template and in connection with obtaining patents or other statutory protection for Approved Project intellectual property are considered eligible

(c) Losses on investments, bad debts and expenses for the collection charges

(d) Losses on other projects or contracts

(e) Federal and provincial income taxes, goods and services taxes, value added taxes, excess profit taxes or surtaxes and/or special expenses in connection with those taxes, except duty taxes paid for importing is Eligible Cost

(f) Provisions for contingencies

(g) Premiums for life insurance on the lives of officers and/or directors where proceeds accrue to the Recipient

(h) Amortization of unrealized appreciation of assets

(i) Depreciation of assets paid for by the Minister

(j) Fines and penalties

(k) Expenses and depreciation of excess facilities

(l) Unreasonable compensation for officers and employees

(m) Product development or improvement expenses not associated with the work being performed under the Approved Project Activities

(n) Advertising, except reasonable advertising of an industrial or institutional character placed in trade, technical or professional journals for the dissemination of information for the industry or institution

(o) Entertainment expenses (including but not limited to, catering, alcohol, non-travel expenses);

(p) Donations

(q) Dues and other memberships other than regular trade and professional associations

(r) extraordinary or abnormal fees for professional advice in regard to technical, administrative or accounting matters, unless approval from CAAIN and ISED is obtained

(s) Selling and marketing expenses associated with the products or services or both being developed under the Project Funding Agreement

(t) In-kind costs

(u) Recruiting fees