Request for Proposals to Develop The Canadian Smart Farm Network Platform

Issued by Canadian Agri-Food Automation and Intelligence Network Ltd.

February 1, 2023

CAAIN · RCAIA

connect connecter
create créer
cultivate cultiver

1 Introduction

The Canadian Agri-Food Automation and Intelligence Network Limited (CAAIN) was launched in 2019 as part of the federal Innovation, Science and Economic Development Canada Strategic Innovation Fund. Its main objective is to support the creation of new knowledge and technological solutions for the most significant challenges and opportunities facing Canada's agri-food sector.

CAAIN's corporate office is located at:

Canadian Agri-Food Automation and Intelligence Network
250 Karl Clark Road
Edmonton, AB T6N 1E4

The Service Provider selected will design and develop the foundational technology stack for the Canadian Smart Farm Network (SFNet) platform. They will then complete the design and build of a pilot network and one data project to demonstrate features and functionality described herein. The Service Provider will also be accountable to support the platform post-pilot implementation.

2 Project Details

2.1 Project Background

One of the projects sponsored by CAAIN calls for the development of a Pan-Canadian Smart Farm Network. The platform will be designed to validate and demonstrate emerging technology, assess and de-risk investment for farmers and provide learning opportunities for students. It will be both a data hub for information sharing and serve as a collaborative space to further Canada's agri-food sector. Within the platform, separate networks will be stood up, sponsored, and facilitated by subject matter expert organizations to address specific projects related to that network's subject.

A successful proof of concept, focused on network building and collaboration, has been in place since 2020 involving Olds College (Alberta), Lakeland College (Alberta), Glacier FarmMedia Discovery Farm (Saskatchewan), University of Saskatchewan's Livestock and Forage Centre of Excellence (Saskatchewan) and the Manitoba Beef and Forage Initiatives (Manitoba). Learnings from the proof of concept will be gathered as an input to this scope of work.

2.2 Project Objectives

The following are the key objectives of this project:

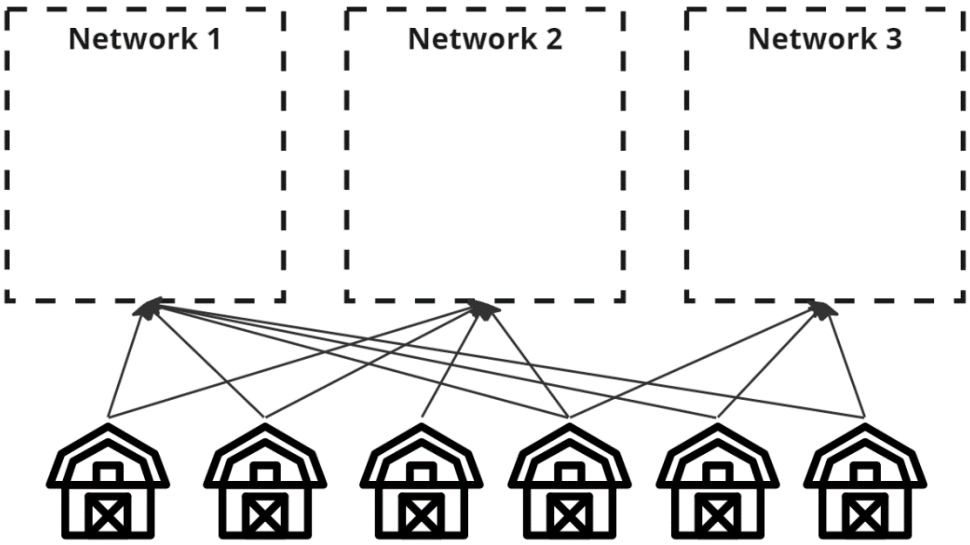
1. Establish Technology Stack and Design of a scalable solution for the Canadian Smart Farm Network platform
2. Deliver and support a pilot implementation of a single Canadian Smart Farm Network on the platform
3. Analyze technology and program governance lessons learned from the Pilot

2.3 Solution Concept

The Canadian Smart Farm Network platform is required to deliver two high level technical capabilities: Collaboration tools and Data Management. Collaboration tools (i.e., website, forums, chat, video conferencing, etc.) are required to build an active community that participates in information sharing and conversation around the network topic.

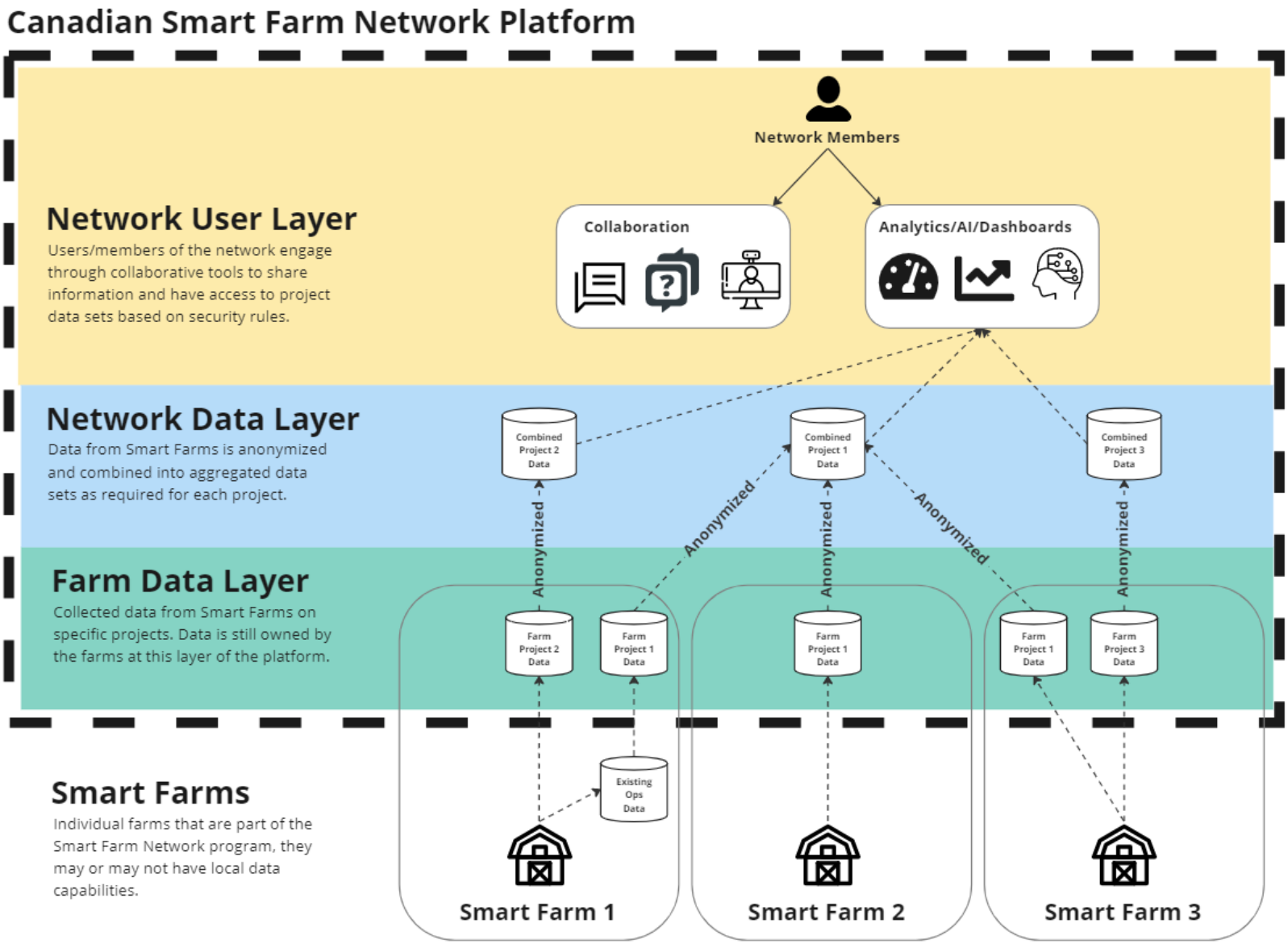
Data Management capabilities are required to collect and aggregate data generated by participating Smart Farms who are testing/using novel technology and processes as part of a project. Aggregating data collected from multiple farms can then be analyzed to provide insights beyond those available from a single farm data set.

The platform will provide discrete sets of these capabilities called “Networks” which are logically and securely separated to focus on a particular agriculture topic.



Each network will contain a Farm Data Layer and a Network Data Layer. The Farm Data Layer is where the Smart Farms will connect into the platform to provide their data and is private to the individual Smart Farm. The Network Data Layer contains combined, anonymized data sets on network projects drawn from the individual farm data sets at the Farm Data Layer.

The Network User Layer presents data to Network Users via Data Visualization Tools, Reports and Dashboards and provides collaboration/communication capabilities for members to interact with. Each network will contain a series of projects which represents the collection of specific data across farms to be consolidated for analysis.


Canadian Smart Farm Network Platform
Network Members
Network User Layer
Users/members of the network engage through collaborative tools to share information and have access to project data sets based on security rules.
Collaboration
Analytics/AI/Dashboards
Network Data Layer
Data from Smart Farms is anonymized and combined into aggregated data sets as required for each project.
Combined Project 2 Data
Combined Project 1 Data
Combined Project 3 Data
Anonymized
Farm Data Layer
Collected data from Smart Farms on specific projects. Data is still owned by the farms at this layer of the platform.
Farm Project 2 Data
Farm Project 1 Data
Farm Project 1 Data
Farm Project 1 Data
Farm Project 3 Data
Existing Ops Data
Smart Farms
Individual farms that are part of the Smart Farm Network program, they may or may not have local data capabilities.
Smart Farm 1
Smart Farm 2
Smart Farm 3

2.4 Canadian Smart Farm Network Personas

The Canadian Smart Farm Network is anticipated to have three personas for consideration: the Smart Farm, the Network Lead, and CAAIN.

2.4.1 Smart Farm

A Smart Farm is an agriculture facility that shares data and information while testing new innovations.

Smart Farm

Objectives and Responsibilities	Technical Needs
• Improve production, profitability and sustainability • Gain insight into other farm operations across Canada • Leadership in the agri-tech community • Early access to emerging technologies in the Canada's agri-food industry	• An easy-to-use environment calling for minimal Smart Farm effort once stood up • Access to subject matter expertise through live (chat/messaging/dynamic data visualization) and passive (document, video) communication portals • The network must be able to extract from existing farm datasets • Secure propriety business data

Onboarding	Data Exchange & Analysis	Collaboration
Smart Farms; • expect an onboarding mechanism with clearly defined roles and responsibilities • needs to understand how the Smart Farm will benefit from the network • need to understand the cost and effort needed to participate in the program	Smart Farms; • need certainty that their business data is secure and only used to meet network objectives • return of value added data analysis and innovation to the Smart Farm ensures continued support and growth of the network.	Smart Farms; • expect two-way interactions with network members and subject matter experts in real-time and/or to consume published documents and data visualizations • wish to compare their experiences and learn from peer farms in other parts of Canada

2.4.2 Network Lead

Network Leads are subject matter experts or organizations that facilitate a Network on a specific topic.

Network Lead

Objectives and Responsibilities	Technical Needs
• Define and sponsor network focus area objectives (dairy, horticulture, grain, etc) • Leadership in the agri-tech community • Provide data specifications to Smart Farms • Gather and analyze data from Smart Farm locations across Canada • Publish results and share best practices among peers and network members	• A network able to aggregate data from sophisticated (integrations with existing data sets) and net-new Smart Farms for the purposes of analysis and publishing • A variety of communication tools to use for information sharing and collaboration (documents, live data visualizations, etc) • Data security to meet proprietary technologies and industry partner needs

Onboarding	Data Exchange & Analysis	Collaboration
Network Leads; • co-facilitate Smart Farm onboarding (and offboarding) • technical training and support to stand up new networks and exploit its features • require business training and support for network and project development	Network Leads; • need reliable and consistent data from all Smart Farms connected to their network • need to source data from one or many Smart Farms across Canada • need authority to work within their mandate to request subject-specific data	Network Leads; • expect active collaboration from network members in the Smart Farm Network • need configurable data visualization tools to share among network members • need a means to share published documents/communications with network members

2.4.3 CAAIN

CAAIN is the Owner of the Canadian Smart Farm Network and governor of its supporting program.

Objectives and Responsibilities

- Leadership for the overarching framework
- Facilitate intra/inter network projects sharing a common theme (climate change, animal welfare, etc)
- Ensure the platform meets the expectations of stakeholders
- The platform remains stable and continues to attracts financial support across Canada

Technical Needs

- Data security and privacy is maintained and auditable throughout the Smart Farm Network platform
- Technical support providing a stable platform for all networks to operate
- Overall program governance to ensure smooth operations and engagement within the platform

Onboarding	Data Exchange & Analysis	Collaboration
CAAIN; • co-facilitates Smart Farm onboarding (and offboarding) and user access administration • facilitates network onboarding including Network Leads • coordinates platform technical support	CAAIN; • needs assurance Smart Farm data is secure and anonymized at the appropriate level • needs to drive common data practices and architecture used across the platform • needs to maintain the platform model for network cloning purposes	CAAIN; • provide policies procedures and practices and terms of use • facilitates continuous platform improvement with stakeholders • facilitates the creation of new networks and modifications required to the network

2.5 Pilot Scope

The pilot project is to provide a live example of a network operating on the Canadian Smart Farm Network platform that will show both the Data Management and Collaborative capabilities. The pilot will assess technology and governance aspects of the program with the program governance items being out of scope for the Service Provider.

2.5.1 In Scope

- Complete Platform Solution Functional Design (documented)
- Development/Configuration of Platform Foundational Components
- Development/Configuration of Pilot Network Components (1 Network Maximum)
- Onboarding of Smart Farms onto Pilot Network (5 Farms Maximum)
- Creation of Data Project onto Pilot Network (1 Project Maximum)
- Facilitate and Support Acceptance Testing
- Post Implementation Technical Support of the Platform and Pilot Network (3 Months)
- Operational Governance Recommendations related to:
    - Technical Support and Operations of the Platform
    - Security Operations of the Platform
- Participation in Pilot Lessons Learned for Technical and Support Considerations
- Complete Operational Transition for Tier 1 Support to existing Managed Services

2.5.2 Out of Scope

- Selection of Pilot Network Lead, Project Subject and Pilot Smart Farms
- Development of Program Governance
- Development of Pilot Lessons Learned
- Helpdesk Support and Triage

3 Requirements and Services

3.1 Corporate Requirements

The Service Provider must demonstrate that it meets or exceeds mandatory corporate requirements and should demonstrate how desirable corporate requirements are met as set out in Appendix A – Corporate Requirements.

3.2 Solution Requirements

The proposed solution must be cloud/Software as a Service (SaaS) based but can involve custom development if required. The data management platform portion of the solution must be a cloud/Software as a Service (SaaS) platform. In addition, data must reside in Canada.

The following are required capabilities the overall technology solution should provide:

3.2.1 Platform Capabilities

- Users can login to the platform (preferably with their own personal/corporate account)
- External Facing Website(s)
    - Different sites for different networks
- Auditing/Platform Reporting
- Data Reporting and Visualization integrated with Collaboration/Communication Spaces
- Decentralized Administration Capabilities
    - Different Admins for different Networks on the platform
    - Overall Platform Administration

3.2.2 Collaboration Capabilities

There are many kinds of collaboration capabilities, below represents some examples of types of capabilities of interest:

- Marketing Capabilities
    - New Posts
    - Blogs
    - Newsletter
- Community Capabilities
    - Forums
    - Chats
    - Community Page
    - Event Tracking
    - Document Management
    - Video Conferencing

3.2.3 Data Management Capabilities

- Data Storage
- Automated Data Extraction, Transformation and Loading
- Net Delta Data Extraction/Load
    - Avoid duplicating reprocessing data
- Manual Data Uploads

- Receive Data Streams from IoT Devices
- Data Reporting and Visualization Tools
- Data Anonymization Transforms
- Data Retention
- Data Archiving
- Securely Segregated Data Environments

3.3 Services

The following services are required and should be included as part of the proposed service delivery approach:

- Project Management
- Technology Platform Design
- Technology Platform Provisioning and Configuration
- Custom Development (if required based on proposed solution)
- Data Specification Design and Implementation (Pilot Network)
- Operational Support (Pilot Network)
- Training and Solution Documentation (Platform and Pilot Network)

4 Proposal Format

Proposal submissions should follow the structure and contents of the subsections found below.

4.1 Service Provider Profile

Provide the following:

- Legal Name of Service Provider
- Details of any proposed subcontracting arrangements
- A brief corporate background
- Service Provider Head Office and applicable service office locations
- Legal Name and Address of Subcontractors
- Primary contact for proposal

4.2 Corporate Requirements

Complete the tables found in Appendix A and provide specific examples of project work and explanations on how they meet the requirement listed.

4.3 Solution Overview

Provide detailed explanation of the proposed solution that meets the platform, collaboration and data management capability requirements found in the Solution Requirements section of this document. This solution overview should include a diagram and details on the technical components of the solution and how they interface/relate to each other.

The solution overview should discuss security and segregated administration of the solution in the context of support horizontal scalability for multiple networks and data projects within networks.

All aspects of the solution should also be discussed in the context of sustainability, extensibility (more networks and projects) and long-term operations including licensing model implications.

4.4 Service Delivery Approach

Provide a detailed explanation of the service delivery approach including project management, resources involved, expected deliverables and a high-level implementation plan with timing based on a 6-month project duration to go live (with 3-month post implementation support).

4.5 Price Form

Complete the pricing form found in Appendix B.

5 Evaluation

5.1 Screening

Proposals received will be screened for meeting mandatory requirements of the RFP. Remaining proposals will then be evaluated by the Evaluation Team.

5.2 Evaluation Criteria

The following categories and weighting will be used to evaluate submitted proposals:

Category	Weighting
Corporate Requirements	20%
Solution Overview	40%
Service Delivery Approach	20%
Overall Quality of Proposal	5%
Pricing	15%

5.3 Short List Presentations

Following evaluation of proposals, CAAIN may request presentations from a subset of Service Providers to further describe their proposal to the Evaluation Team. CAAIN may at this time request financial statements to confirm long term partnership viability of the Service Provider.

5.4 Reference Checks

CAAIN may request and contact references for the Service Provider and any subcontractors. CAAIN may choose to reject any proposal with unsatisfactory references.

6 RFP Terms and Conditions

6.1 Schedule of Events

The following is the schedule of events for this RFP:

Event	Date/Time
RFP Issue Date	February 1st, 2023
RFP Closing Date and Time	March 15th, 2023 Noon MDT
Evaluation of Proposals	March 15th to April 5th, 2023
Short List Presentations	April 17th to April 21st, 2023
Final Selection	April 28th, 2023

6.2 Proposal Submission

Proposals must be submitted electronically, via e-mail, in Microsoft Word or Adobe PDF format by the RFP closing date and time to the following:

cornelia.kreplin@caain.ca

Late proposals will not be accepted.

6.3 Price

All pricing proposed shall be in Canadian funds and not include any sales tax including GST, HST and PST.

6.3.1 Expenses

Unless otherwise noted in the RFP response, all other expenses are assumed to be inclusive in provided pricing.

6.3.2 Facilities

It is assumed that all services, materials, and expense costs identified above are inclusive of all overhead; office space and equipment including supplies, administrative burden, mark-up and all other costs to perform the services for the duration of the performance of the services.

6.4 Questions

All questions should be (and will only be responded to if) submitted in writing to:

cornelia.kreplin@caain.ca

CAAIN intends to release all questions and answers to all proposing Service Providers. If required, confidentiality of questions must be requested and explained to the satisfaction of CAAIN. If CAAIN does not determine the explanation of confidentiality to be sufficient the submitter will be given the opportunity to withdraw the question.

Appendix A – Corporate Requirements

Mandatory Requirements

ID	Requirement	Parameter	Service Provider Response
CM - 1	Must be an incorporated company within Canadian Federal or Canadian Provincial jurisdictions providing the proposed services for the last 5 years.	Years of incorporation and in which jurisdictions	
CM – 2	Demonstrated relevant experience delivering design/build projects of similar size involving data management and collaboration tools.	At least three (3) relevant projects within the last 5 years	
CM – 3	Demonstrated relevant experience with the proposed Data Management Technology platform and its implementation.	At least three (3) relevant projects within the last 5 years	
CM – 4	Demonstrated relevant experience developing Technical Solution Handover Documentation.	At least three (3) relevant projects within the last 5 years	
CM – 5	Demonstrated experience providing operational support services for similar technology solutions.	At least three (3) relevant projects within the last 10 years	
CM – 6	Confirm operational support resources for the solution are based in Canada.	Yes/No	
CM – 7	Should have resources available for implementation and support during CAAIN regular business hours (8am - 5pm MST).	Yes/No	

Desirable Requirements

ID	Requirement	Parameter	Service Provider Response
CD – 1	Should have formal Certification and/or Partnership with the proposed Data Management Technology platform.	Relevant Current Certifications and/or Partnerships	
CD – 2	Demonstrated experience with data management solutions involving segregated data ownership and security.	At least three (3) relevant projects within the last 5 years	
CD – 3	Demonstrated experience with solutions involving user authorization and authentication coming from multiple organizations.	At least three (3) relevant projects within the last 5 years	

Appendix B – Pricing Form

Pricing Assumptions

Pricing provided below should include the following assumptions:

- Pilot Design, Build and Implementation to take 6 months
- Post Implementation Support 3 months post go Live
- Data Storage for the pilot at 10TB
- 10 administrative users, 20 standard users = 30 total users

Pricing Table

The Service Provider shall complete the following fixed price table:

Item	Description	Fixed Price
1	Platform functional and solution design	$
2	Platform build and implementation - includes pilot network with working project data	$
3	Post-implementation onboarding and support	$
	Total	$