



## Grand Farm Innovation Facility

### Overview

Grand Farm Research and Education Initiative ("Grand Farm"), is a North Dakota 501(c)(3) non-profit that accelerates collaboration and innovation to develop technologies for the farm of the future. Grand Farm is a subsidiary of Emerging Prairie, a North Dakota 501(c)(3) non-profit.

Grand Farm empowers a neutral platform for industry, producers, higher education, and government to collaborate on autonomous and advanced agriculture technology. Grand Farm works regularly with companies and startups from North Dakota and around the world to better understand their products, provide capabilities for demonstration and development, and to amplify the technologies in North Dakota. Grand Farm currently operates a test site on donated agricultural acres to demonstrate and test new and innovative ag technologies.

#### *Requested Allocation: \$35M*

- \$25M toward Grand Farm Innovation Facility planning, development, infrastructure, and construction (subject to 1:1 match)
- \$6M for project management
- \$4M towards workforce development in advanced technology in agriculture

This one-time request would leverage federal ARPA funds with private investments to establish a permanent, world-class destination innovation facility in North Dakota for innovation in advanced agricultural technology. It would enable robust project management capabilities for the building and operations of the facilities, ecosystem, and farm projects. And it would make possible expanded workforce development offerings beyond the existing software development bootcamp into cyber security, embedded software, and more.

Grand Farm is currently finalizing the process of selecting a permanent location in North Dakota for the Innovation Facility. This funding would carry momentum through selection of the location, directly into the preparation, planning, and construction of Grand Farm's Innovation Facility.





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## Impact

Since the launch in April 2019, Grand Farm has been working on growing a globally relevant ecosystem -- developing relationships with organizations from around the world. Now, Grand Farm is poised to focus this energy into an Innovation Facility driving significant positive impacts to North Dakota.

Grand Farm was developed to be additive to existing infrastructure, programs, and state/federal investments. The independent, neutral-platform allows for direct and rapid engagement with growers, industry, researchers, and government. This gaps-based approach maximizes investment into programs, facilities, and infrastructure.

The construction of the Grand Farm's Innovation Facility will:

- Engage Growers - The technology developed by industry and higher education at the Innovation Facility will make growers more efficient and make their jobs safer. In collaboration with North Dakota State University's extension, Grand Farm will work to bring this technology to growers. Grand Farm's Innovation Facility will also serve as a meeting place for growers and their organizations, showcasing modern and future technologies in agriculture.
- Multiply State Funding - Grand Farm's Innovation Facility will also be funded (and matched) through private contributions by individuals and organizations from around the world, multiplying North Dakota's investment into the project. To raise the matching funds for this project, Grand Farm will develop and launch a capital campaign. This capital campaign will bring in investments from individuals, philanthropic organizations, and corporations from a global setting -- many of which have already expressed their interest in supporting the development of an Innovation Facility.
- Support Agriculture and Technology Businesses - Grand Farm's Innovation Facility will provide businesses with office space, workshop space, test plot space, regular engagement with the agriculture and technology industries, and allow for scalable options for growth.
- Attract Businesses to North Dakota - Leveraging Grand Farm's rapidly growing, globally relevant ecosystem, and working with North Dakota resource partners, Grand Farm will attract businesses to North Dakota both nationally and internationally -- in-turn, growing North Dakota's economy.





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- Create High-Paying, High-Skilled Jobs - The attraction of businesses to North Dakota will create high-paying, high-skilled jobs in the agriculture and technology industries.
- Increase the Tech-Ready Workforce - To supplement traditional education efforts, Grand Farm's Workforce Development Program will develop high-skilled, tech-ready workers to fill job gaps existing in agriculture and technology industries.
- Agriculture Safety - From 2012-to-2020 in North Dakota, there were 122 total reported incidents resulting in injuries (55) or death (67) in agriculture operations. Agriculture is considered one of the most dangerous jobs in the United States of America, and is often the most dangerous job in other countries. Innovations in agriculture technology often lead to safer environments for those in the agriculture industry.
- Access to Funding for Early Stage Startups and Researchers - Grand Farm has served as an attractor of venture capital for early-stage companies. This compliments North Dakota program's, including: LIFT, ND Development Fund, Agriculture Products Utilization Committee, and the North Dakota Legacy Fund. Grand Farm continues to collaborate with University of North Dakota and North Dakota State University to bring federal grants to North Dakota.

### Innovation Facility Construction Budget

| Preliminary Capital Budget for Phases of Grand Farm Innovation Facility                                                                                                     |                                   |               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------|
| Planning, Feasibility, Predesign                                                                                                                                            |                                   | \$ 150,000    |
| Architectural Design of Master Plan                                                                                                                                         | 10%                               | \$ 3,750,000  |
| Land                                                                                                                                                                        | 160 acres                         | \$ 960,000    |
| Construction costs; consulting expenses; project management fees; equipment, furniture and fixtures; utilities and non-utility infrastructure; and any other major expense. | est. \$500/sq ft for 75,000 sq ft | \$ 37,500,000 |
| Contingency, scope changes                                                                                                                                                  | 10%                               | \$ 3,750,000  |
| Overrun                                                                                                                                                                     | 10%                               | \$ 3,750,000  |
| Construction financing (\$50M for 18 months)                                                                                                                                | 4% interest rate                  | \$ 3,000,000  |
|                                                                                                                                                                             | Total                             | \$ 52,860,000 |





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## Business Plan

Grand Farm's Innovation Facility is intentionally built around a business model which will be self-sustaining following completion of construction.

| Annual Revenues                     |             |
|-------------------------------------|-------------|
| Events and Conferences Sponsorships | \$350,000   |
| Events and Conferences Tickets      | 100,000     |
| Events and Conference Hosting       | 350,000     |
| Co-Working Space Membership         | 75,000      |
| Office Leases                       | 400,000     |
| Co-Location Leases                  | 600,000     |
| Shipping Access Fees                | 50,000      |
| Technology Workshop Supplies        | 25,000      |
| Technology Workshop Memberships     | 100,000     |
| Test Plot Management Fees           | 300,000     |
| Education Fees                      | 300,000     |
| Education Scholarships              | 250,000     |
| Project Management Office           | 500,000     |
| Partnerships                        | 500,000     |
| Direct Donations                    | 100,000     |
| Naming Rights                       | 1,000,000   |
| Total Estimated Annual Revenue      | \$5,000,000 |





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| Annual Expenses                           |             |
|-------------------------------------------|-------------|
| Fully Loaded Direct Staff Costs (30 FTEs) | \$2,890,000 |
| Travel                                    | 250,000     |
| Sponsorships for Grower Organizations     | 100,000     |
| Startup Project Seed funds                | 100,000     |
| Building Maintenance                      | 60,000      |
| Equipment Acquisition/lease               | 250,000     |
| Farm Management                           | 140,000     |
| Utilities                                 | 120,000     |
| Taxes                                     | 250,000     |
| Equipment Maintenance                     | 100,000     |
| Insurance                                 | 80,000      |
| Security                                  | 50,000      |
| Marketing/events                          | 400,000     |
| Office supplies                           | 20,000      |
| Snow removal/Grounds maintenance          | 40,000      |
| Total Estimated Annual Expenses           | \$4,850,000 |

As the facility is developed and comes to completion, further refinement will be required as it relates to the overall operating model with the goal of being able to self-support the operation at the forefront of decision making.

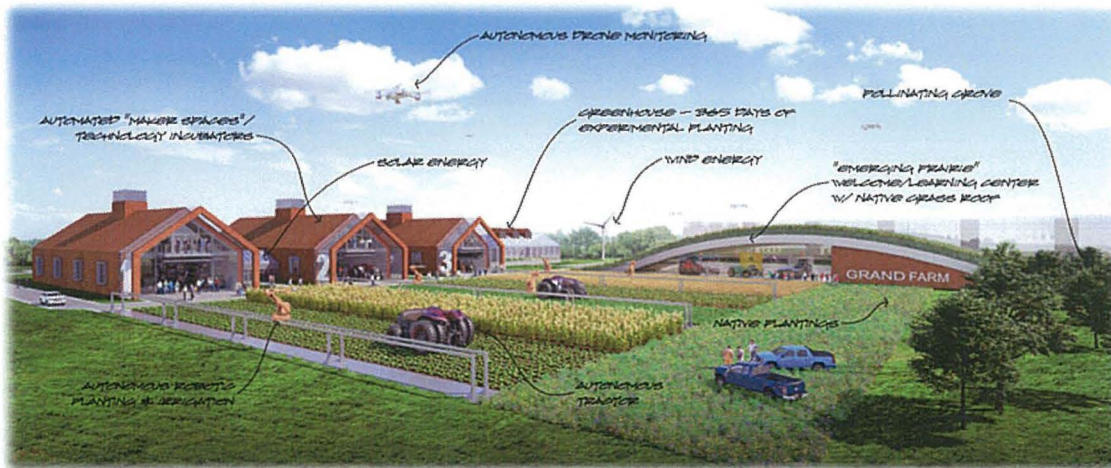


## Appendix: Facility Vision

Grand Farm's Innovation Facility will grow and inspire businesses, organizations, and entrepreneurs nationally and internationally to collaborate in developing technological and human solutions for farming in a new era.

The cornerstone for the Innovation Facility is the main hub -- a rapid prototyping center that will sit on forty acres and will include a large conference and event space, offices, as well as several workspace areas. Grand Farm envisions these spaces will be where small businesses, corporations, educators, and entrepreneurs will collaborate on projects; share tools; learn; prototype novel ideas and designs into products; start ventures; and, share knowledge.

The main hub will ideally have a variety of resources available for prototyping purposes, including but not limited to 3D printers, CNC milling machines, laser cutters, a machine shop, and a robotics lab. Innovators who use the space will be able to immediately test their products in the fields that surround this hub, empowering the creators to investigate their product performance in a highly capable, real-world environment. The proximity of the facility to the testing area, small businesses, corporations, and startups, as well as larger farm equipment companies, will allow the participating entities to quickly transform their ideas into viable and commercializable products.



The Innovation Facility will allow for individuals and organizations to rapidly prototype products for testing; this space will also serve as a meeting and smaller event space. This requires the necessary space and equipment to accomplish this task. This is the first module of a much larger Innovation Facility to be developed. The focus of this facility will be to provide opportunities for collision and collaboration, where product ideas can be taken from ideation to reality. This building will primarily include the following components:

### **Entrance**

Guests, tenants, and staff will be met with stairs leading up to the entrance of the Grand Farm hub.

### **Welcome Area**

As people enter the hub, they are met with a welcome area. A receptionist will greet visitors and welcome back tenants and members. On the walls of the welcome area are displays, portraying information and video of farm operations in real-time. There is an area for seating. This welcome area serves doubly as a security point, preventing people without access to the makerspace and innovation center offices. There is an elevator to the second floor. Attached to the welcome area is a conference/classroom where meetings and presentations occur.

### **Workshop**

Coming off of the welcome area is a community workshop. Worktables fill the room with space for product development and teams to talk through their innovative process. This space has 3D printers, Raspberry Pies, a mill for metal working, and product testing equipment like oscilloscopes. Attached to this are several private working rooms with locked doors. A technician desk is present where a full-time technician can maintain equipment and provide consultation.

### **Garage Workshop**

For larger equipment, a garage workshop exists. This workshop will house small farm equipment for product development and testing. A garage door allows for direct access to the fields.

### **Offices**

On the first and second floor of the hub are offices. Some of these offices will be for the Grand Farm staff. There are private offices to house tenant businesses. These offices provide individual desk space and group tables where product development can occur.

### **Event Room and Observatory**

On the second floor is an event and conference room with windows overlooking the demonstration facility. This is where larger events occur and where groups can be hosted. This room will double as a group workroom when events are not occurring. This room will be modular, allowing for scalability with the size of events.





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## Fields

Grand Farm is currently utilizing more than 140 acres for demonstration and research purposes in the growing season 2021. The minimum number of acres for the 2022 growing season would be 160 acres.



## Appendix: Detailed Plan

### Innovation Facility Construction

The \$52 million (with \$25 million from American Rescue Plan Act) to be spent towards Innovation Facility construction will include: planning, development, infrastructure, construction of buildings and launch. Below is a detailed breakdown of each phase and elements which will be included:

#### *Phase 1: Planning (Start: January, 2022)*

- Land Acquisition - Currently, Grand Farm is undergoing the selection process for the final site of the Innovation Facility. Once selected, the land will be acquired.
- Architect Engagement - Engagement of an architect to design the Innovation Facility, including land assets and building.

#### *Phase 2: Development (Start: June, 2022)*

- Capital Campaign - To raise matching funds, Grand Farm will utilize the architectural plans and business plan to design and launch a capital campaign.
- Engineering Plans - With the architecture plans, engineers will build out the overall engineering plan for the site.
- Security Plans - A consultant will be employed to identify potential security liabilities within the full facility build-out and identify solutions that can be implemented to offset risks.

#### *Phase 3: Infrastructure (Start: January, 2023)*

- Roads - The development of the road infrastructure to support traffic, construction, and shipping.
- Utilities - Connecting existing public infrastructure to the site, including water, sewer, and electricity.
- Connectivity - Bringing connectivity capabilities to the sites to both support building operations and projects on the Grand Farm.
- Land Development and Management - Preparation and management of land for a test plot environment to support AgTech projects on the site.
- Equipment - Purchasing of equipment for the Innovation Lab, land management, and for outfitting the buildings.

#### *Phase 4: Construction (Start April, 2023)*

- Buildings - Construction of the buildings on the site which make up the Hub and the Wings of the main facility buildings.



- Launch Activities - Final launch of the Grand Farm Innovation Facility.

### **Project Management**

The \$6M towards project management would be spent on the work done to build-up to the launch of the Innovation Facility -- each element will supplement the phases of facility construction. These elements include: 1) Construction Management; 2) Legal Work and Permit Acquisition; 3) Project Development; 4) Stakeholder Input Gathering; and, 5) Contract Development.

- 1) Construction Management - The contracting or hiring of project managers or reallocation of existing staff to oversee the construction of the Grand Farm Innovation Facility, and ensure milestones are met on on-time and within budget.
- 2) Legal Work, Contract Development, and Permit Acquisition - The contracting of lawyers to develop contracts and permits for the Grand Farm Innovation Facility. This will include all permitting necessary for the facility to be built and contracts with vendors, tenants, co-location opportunities, etc.
- 3) Project Development - Continuing the work from 2019 to the present, this would be focused on facilitating projects on the Grand Farm site around AgTech, which will continue to grow into the Innovation Facility launch. This includes the costs centered on implementation, execution, and completion of projects.
- 4) Stakeholder Input Gathering - To support the vision Stakeholders have of the Grand Farm Innovation Facility, stakeholder input sessions will be needed. Groups will include: community members and leaders, growers, industry, and researchers.
- 5) Contract Development - The development and implementation of contracts for the successful launch of the Grand Farm Innovation Facility.

### **Workforce Development**

The \$4 million towards workforce development would be spent to further develop Emerging Digital Academy and to expand the offerings. This will include: 1) Input gathering from the agriculture and technology industry; 2) Curriculum development; 3) Marketing and communications and; 4) Talent acquisition or contracting. These elements are critical to the development of a skilled workforce to support the agriculture industry. Emerging Digital Academy will also be integrated into the Grand Farm Innovation Facility.





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- 1) Input gathering from the agriculture and technology industry - A series of meetings with stakeholders in the agriculture and technology industry to identify key gaps in skills within the workforce where Emerging Digital Academy could supplement with new curriculum elements.
- 2) Curriculum development - Taking the input gathered from the agriculture and technology industry, using internal talent, hiring staff, or utilizing contractors to develop curriculum for identified additional programs to bring into Emerging Digital Academy. This will also include the scaling of existing programs to meet the growing needs of the technology and agriculture industries.
- 3) Marketing and communications - Develop regional marketing and communications campaigns for expanded workforce development offerings. Recruit for new programs developed and implemented through Emerging Digital Academy.
- 4) Talent acquisition or contracting - Building out the team through hiring or contracting instructors with skills in the identified gap areas. This includes the hiring of admissions and administrative staff to support the scaling of existing programs and the implementation of new programs.





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### Appendix: Results to Date

| Key Performance Indicators     | 2020 Actual | 2021 (Actual as of Oct 2021) | 2022 Projected | 2023 Projected | 2024 Projected |
|--------------------------------|-------------|------------------------------|----------------|----------------|----------------|
| Number of Partners             | 9           | 53                           | 75             | 100            | 125            |
| Number of Events & Conferences | 20          | 65                           | 80             | 100            | 120            |
| Number of people engaged       | 750         | 2,805                        | 5,000          | 7,500          | 10,000         |
| Number of presenters           | 90          | 232                          | 275            | 325            | 375            |
| Number of Countries Engaged    | 5           | 58                           | 65             | 75             | 85             |
| Signature Initiatives          | 1           | 6                            | 8              | 10             | 12             |
| # Visitors to the Farm         | 750         | 1,663                        | 2,000          | 2,500          | 3,500          |
| Startups Directly Engaged      | 5           | 67                           | 100            | 150            | 200            |
| # of Businesses Attracted      | 0           | 6                            | 9              | 12             | 15             |
| Number of Learners Graduated   | N/A         | 36                           | 45             | 50             | 55             |



## Appendix: 2021 Sky, Gold, and Green Partners of Grand Farm

| Sky Partners   |  Microsoft  Kevin & Stacy Biffert  CHS  NDSU                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |  |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
|                |  FARGO MOORHEAD  NORTH Dakota Commerce  IntelligentAg  GENESIS FEED TECHNOLOGIES  AgCountry Farm Credit Services  RAZOR                                                                                                                       |  |  |  |  |  |
|                |  RDO R.D. OFFUTT COMPANY  ISIGHT DRONE SERVICES  Farmers Union  KENNELLY BUSINESS LINE  NORTHERN PLAINS UAS TEST SITE  PROSEED  DCN Dakota Carrier NETWORK |  |  |  |  |  |
| Gold Partners  |  BREMER BANK  ONSHARP  LIVEWIRE  MIDCO  COMPEER FINANCIAL  NETWORKCENTER INCORPORATED                                                                                                                                                         |  |  |  |  |  |
|                |  SATSHOT  NDGGA  BUSHEL  REALM AGRICULTURE  xcube LABS  ADFARM                                                                                                                                                                        |  |  |  |  |  |
|                |  Xcel Energy  EideBailly  Bobcat  Thorsen & Seifert  GENESIS FEED TECHNOLOGIES  RED RIVER FARM NETWORK  nice                                 |  |  |  |  |  |
| Green Partners |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |  |
|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |  |
|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |  |

Note: This list does not include ground-tier partners, which are early-stage startups within the Grand Farm ecosystem.



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## Appendix: Matching Funds Strategy

*Note: Currently, this proposal includes funding to develop and launch a capital campaign. This statement is the initial thinking of Grand Farm as it relates to securing capital for the Innovation Campus. As the Capital Campaign is developed, this thinking could evolve.*

Currently, Grand Farm intends on utilizing a tiered approach to raise the capital needed to build out the Innovation Facility. This includes four tiers of contributors which would be made up of: individual contributors, large corporate contributors, federal government grants, and economic development corporations.

- Tier 1: \$1,000,000+ in contributions. There have been 20 identified potential contributors to-date.
- Tier 2: \$50,000/year for 3 years in contributions (total \$150,000). There have been 30 identified potential contributors to-date.
- Tier 3: \$20,000+ in contributions. There have been more than 40 identified potential contributors to-date.
- Tier 4: Below \$20,000 in total contributions.

Grand Farm anticipates in the development of the capital campaign, more opportunities for contributors will be identified or emerge. The current list of potential contributors accounts for \$25.3 million in contributions.

