Precision Agriculture: Answer to the World’s Grow

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Co-Sponsored By:

verizon
Grand Farm
Precision Agriculture
Infrastructure Feeding the World

Dr. William Aderholdt, Innovation Organizer
Our Mission

Grand Farm Research and Education Initiative ("Grand Farm"), is a North Dakota non-profit that is enabling technology to feed the world.

There is no reason the Red River Valley can’t become the hub for the future of agriculture, much like Detroit became known for automobiles.’’

- Brad Smith, President of Microsoft
Grand Farm

Grand Farm empowers a neutral platform for industry, producers, higher education, and government to collaborate on autonomous and advanced agriculture technology.
Our Work

Grand Farm directly engages our community, bringing together local stakeholders with organizations from around the world to collaborate on innovations solving some of the world’s largest challenges.
Challenge

In the next 25 years the global population is expected to double. To feed this population, 60%-100% more food will need to be produced on the same number of acres we have available today.

Global food storage will last less than one year.

Impacts on the agriculture supply chain include:

→ Drought
→ Fertilizer Costs
→ Global Conflict
Technology Solutions

A primer...

Data Management Platforms
Energy
Heavy Equipment
IOT
Sensors
Traceability
Unmanned Aerial + Ground Systems
Technology Solutions

Sensors

- Collects data from soil, weather, and crops
- Low bandwidth required
- 10-100kb / 4 hours - 24/7
Technology Solutions

Unmanned Aerial + Ground Systems

- Task oriented robotics to assist with ongoing operations
- High resolution remote sensing of crops
- High bandwidth required
Technology Solutions

Heavy Equipment

➔ Substantial investment
➔ On-board computing with telematics
➔ Some autonomous decision making
Grand Farm’s Farmer Network

User Story: Mark

› North Dakota Farmer
› Grand Farm + Trilogy
› Maximizing ROI
Grand Farm’s Farmer Network

What We’ve Heard

- Reliability and Consistency
- Last Mile + Last Acre Solutions
- 30% Annual IoT/Sensor Increase
- Data Resolution Increases + Economy of Scale Decreases
- Future Land Value + Access to Data + Connectivity
Last Mile Connectivity

High Bandwidth Solutions
→ Reach Edge of Field

Diverse Solutions to Maximize Connectivity
→ Reach Diverse Geographies + Terrains

Manage High Computation + Connectivity
→ Real Time Autonomous System Decision Making
→ Requires Large Amounts of Data
Last Acre Connectivity

Connecting the Fields

- Dispersed Connectivity Across Fields
- Less Bandwidth, More Coverage
- Scalable, Replicable Across Fields
Security + Privacy

Connecting and Securing the Data

➔ Grand Farm Edge Compute Platform
➔ Data Management + Ownership
➔ Edge Computing + Scalable Solutions
➔ Cybersecurity
Consistency + Reliability

Bringing it All Together

- Standardized + Uniform Solutions
- Plug-and-Play Solutions
- Grand Farm Technology Validation
To feed 30% more people in the next 25 years, we need to produce 60%–100% more food with the same number of acres.
This is only possible with substantial deployment of rural and precision agriculture infrastructure consisting of both last mile and last acre solutions.
This will create a reliable and consistent environment for all farmers
Help Solve This Challenge

Interested in learning more about getting involved at Grand Farm?

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