A PLATFORM FOR THE FUTURE OF AGRICULTURE USE CASE
A Platform for the Future of Agriculture

Do more with less. It’s every profit-seeker’s objective, but in agriculture it has considerably higher implications: this industry is required to sustain human life.

Open up any recent report on the subject however, and you’ll quickly notice that agriculture is in need of transformation due to a number of significant factors. Increased population demand, freshwater scarcity, climate change, labor shortages, political uncertainty, disease...the list goes on.

We believe that converging technology trends will enable the next agricultural revolution and have proven how the nio Platform can play a vital role.

Population Growth by Region

![Population Growth by Region Chart]

Challenges

In recent years, an admirable amount of time, energy, and funding has been dedicated to trying to solve the issues that farmers across the world are facing. The goals are simple. How can the latest advancements in technology allow farming to produce more crops at a higher quality using less resources? As with any promising new innovation, precision agriculture has been fraught with growing pains that have prevented scale.

**POINT SOLUTIONS THAT DON’T COMMUNICATE**

Successful farming requires the ability to efficiently manage thousands of variables that are all unique, but also interdependent. Unfortunately, the agriculture industry is riddled with point solutions that don’t address these interdependencies. They may help solve specific problems, but don’t communicate with one another to solve the bigger picture. That remains up to the farmer alone, as it was without the point solutions.

**Precision Agriculture Defined**

Precision agriculture is a farming management concept based on observing, measuring and responding to inter and intra-field variability in crops. The goal of precision agriculture research is to define a decision support system (DSS) for whole farm management with the goal of optimizing returns on inputs while preserving resources.

**AgTech Landscape 2017**

As of last year, there are nearly 1,500 companies dedicated to creating technology solutions for the agriculture industry.
DIFFICULT TO UNLOCK VALUE OR ROI
Farmers don’t care about data…they want results. Many of today’s solutions create piles of noisy data that farmers don’t have the time nor means to contextualize and take meaningful action upon.

RURAL NETWORKING BURDEN
Often rural, many agriculture settings don’t have the luxury of WiFi, cellular, or other high-bandwidth communication capabilities. Precision agriculture solutions can’t be reliant on an internet connection or a cell tower to handle mission critical operations.

The nio Solution

nio provides a single platform that can simply incorporate diverse components into one intelligent solution. It’s capable of unlocking true transformation in the agriculture industry by creating an interoperable "nervous system" for all sensing, logic, control, automation, and artificial intelligence. nio enables customizable precision and resource management – improving crop quality and yield, while optimizing the use of critical resources.

nio provides a platform for seamlessly integrating data from diverse sensors into a single decision center. By dynamically considering current weather conditions, forecasts, soil moisture, in-canopy conditions and irrigation events, we’re able to develop specific farming plans with nio that continuously learn and take action on our behalf.

- Phil Asmundson, Deep Sky Vineyard
nio Features

INTEROPERABILITY
nio allows users to easily connect and integrate any type of signal into a system using nio blocks. Rather than managing several point solutions to solve isolated problems, users can seamlessly integrate legacy infrastructure with the latest technology to build holistic solutions.

PROGRESSIVE ADOPTION
Farming is part science, part art. Trust must be earned and farmer input must be considered before operations will be turned over to machines. The nio Platform provides users the ability to start small with simple visibility, progress to predictive control, and then confidently transition to full automation and AI.

NO INTERNET REQUIRED
nio is a distributable software platform. It gives the user the flexibility to decide where decision making and computation is most important within their operation and implement it there. This allows nio to limit network traffic and make mission critical decisions locally, or at the edge, without the dependency on an internet connection.
Results

nio offers technology providers, integrators, industrial agriculture companies, and small-scale farmers a simple, scalable platform for precision agriculture. It unifies disparate technologies and empowers solutions that lead to higher yields with better quality, while using fewer resources.

When applied at Deep Sky Vineyard, nio transformed a manually-dependent, subjective farming operation into a highly-instrumented and automated example of agriculture innovation.

With input from the vineyard owners, nio has the ability to autonomously deliver the optimal amount of resources at the correct times in the growing season based on hundreds of sensors throughout the field.

In one season, the vineyard owners have completely re-imagined their growing strategy, reduced resource delivery, and improved the quality of the grapes.

To learn more about how nio transformed Deep Sky Vineyard and how you can implement precision agriculture with nio, click here to schedule a private demonstration.

Ready to start building? Click here to sign up now.
REFERENCES

1 The Future of Food and Agriculture: Trends and Challenges by Food and Agriculture Organization of United Nations
2 Future Directions of Precision Agriculture by McBratney, A., Whelan, B., Ancev, T.
3 2017 Agtech Landscape - What’s on the Horizon by The Mixing Bowl.