



# Agriculture company plants seeds for IIoT data insights with AspenTech® and AWS

## Executive Summary

[Nutrien](#), a fertilizer company based in Canada, runs the largest vertically integrated agriculture company in the world. With over two dozen manufacturing and processing facilities spread across the globe and nearly 2,000 retail stores in the Americas and Australia, the company collects a lot of data from their industrial operations that is underutilized. The company wanted a way to release data from facility equipment and use it to improve throughput and productivity, predict equipment failures, and open the door to a new level of analytical insights. The company adopted AspenTech Inmation™ which securely extracts data from equipment across a plant or enterprise and aggregates it in a data lake on AWS. Once there, people across the organization can access the data. Early results show the near and long-term value of using AspenTech Inmation to centralize, manage, and contextualize operational data on AWS for advanced analytics use cases.

## Brownfield equipment traps data and stunts healthy growth

As the world's largest producer of potash and the third largest producer of nitrogen fertilizer, Nutrien handles farm inputs from the bottom of the mine to the top of the silo. Like any industrial or manufacturing operation, Nutrien stores operational data (OT) in a host of systems including plant automation systems, plant data historians, machinery protection systems, laboratory systems, etc. If someone wants to use consolidated production data from a variety of sources to better understand the company's processes or yields, the team at each individual site must perform high-effort manual tasks on an ad-hoc basis to extract and share it. At the plant level, this process is slow. At an organization level, it's highly inefficient—and may lead to inadvertent security vulnerabilities.

In collaboration with



## About Nutrien

As the world's largest provider of crop inputs, services and solutions, Nutrien helps growers to increase food production in a sustainable manner.

With 23,500 employees and a global footprint of operations and investments, Nutrien's crop inputs and services reach major growing regions all over the world.

## AspenTech Inmation and AWS help nurture new insights

Nutrien needed a solution with two key components—first, it needed a plant-based platform that would combine data from different production systems and applications and expose and egress the plant data to AWS on an enterprise scale. Second, it needed a cloud-based data lake that would support data sharing across the organization and enable access to higher-level advanced analytics capabilities. The company adopted the AspenTech Inmation solution recommended by Spartan Controls. “We already run a lot of AspenTech technology, and Spartan knows some of our sites extremely well,” said Daniel Funk. “So, when they endorsed AspenTech Inmation, we were confident it would work for us and that our sites would be open to implementing it.”

At the facility level, AspenTech Inmation connects to legacy and modern OT systems, such as distributed control and safety systems, programmable logic controllers, data historians, manufacturing execution systems, and maintenance management systems. It provides a central management solution for orchestrating data movement from these systems across legacy networks and firewalls. “AspenTech Inmation runs open-source software that, in theory, anyone could access and build,” said Daniel Funk. “But the real value lies in the industrial expertise AspenTech embeds within the solution, which allows us to measure implementation and go-live in hours, not weeks—it has been absolutely fantastic.”

Once data from each facility is collected, it flows from the AspenTech Inmation system to AWS through Kafka and AWS IoT Core. “AspenTech Inmation connects to AWS through MQTT, Kafka, Kinesis or a web API, which gives us the flexibility to choose which use cases are better served by one over the other. Even though we don’t need it yet, I can see how that level of flexibility will be huge for us,” said Daniel Funk. Running on AWS helps Nutrien centralize, manage, and contextualize its operational data in an enterprise scalable Industrial Data Platform and use advanced analytics to drive better business outcomes at scale across the organization.



## Makes existing industrial IoT data accessible for analytics

AspenTech's solution serves as an operational data connectivity, contextualization, and storage solution, collecting different types of data from Nutrien's industrial operations and transferring it to a data lake on AWS that Nutrien calls its Insights platform. Working from within the Insights platform, various business teams can easily explore the consolidated data and look for ways to improve their business priorities including improving plant uptime, making processes and equipment more reliable, and driving production improvements. "This is a new capability being introduced, and it's being implemented with minimal site effort, but it unlocks a bunch of data extremely securely," explained Daniel Funk. "With AspenTech's Inmation, we can access data that used to just sit on the shop floor or took a lot of effort to extract and perform new types of analysis for near real-time insights."

## Scales capabilities, practices, and expertise across facilities

From day one, the data services team knew it needed a solution that would not only work across different plants and locations but also empower teams to scale expertise and best practices as well. For example, the company runs 14 Nitrogen production facilities around the world—at some point, each one will encounter challenges others have already faced. "It's hard to have experts everywhere, especially in the more remote locations," said Daniel Funk, "but if we have experts that can see everything and share knowledge, we can solve problems faster and more efficiently across sites."

Similarly, the development teams at Nutrien plan to use the Industrial Data Platform on AWS to scale their work with a build once, deploy anywhere approach. "It's great to run development and exploration on AWS," said Daniel Funk. "Not everything ends up going to production, but when it does, we no longer have to stitch things together from desktops and servers where we downloaded the data to build and test. Plus, we can deploy it anywhere."

## Provides a secure solution for connecting plant systems to the cloud

Moving to a single data lake system on AWS is not just a matter of reducing costs and increasing data access, it's about enabling teams to securely implement new systems.

**"The data services team wanted to find a faster, more effective way to liberate industrial data trapped in their plant data systems and make it accessible across the entire company. We use AWS for advanced analytics in other areas of our business, and it got us to thinking about all the ways we could improve how our facilities run if only we could find a way to efficiently extract and aggregate additional systems and machine data."**

**Daniel Funk**

Sr. Manager of Data Services  
at Nutrien



“By using AspenTech Inmation to connect to AWS, we can do it once, we can do it right, and then we can have access to all of the plants' data without every site doing its own cloud implementation,” said Daniel Funk. This helps the company reduce the security risk of independent teams potentially using bespoke solutions that may not be secure by default. In some cases, it will also enable plants to migrate off older solutions that are not as secure.

### **Applies past AWS experiences to predict the platform’s future**

The data services team looks forward to extending its use of Amazon Sagemaker and Sagemaker Studio to include the new plant data. “We have not used Sagemaker with AspenTech Inmation data yet,” said Daniel Funk, “but we know we can bring those two ingredients together, and the data scientists, contractors, and research teams that we work with love the collaborative environment and compute power it provides them starting day one of any project. We see huge potential in the long run to use the platform to bring people together.”

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**Daniel Funk**

Sr. Manager of Data Services at Nutrien

### **About AspenTech**

Aspen Technology, Inc. (NASDAQ: AZPN) is a global software leader offering a unique combination of deep domain expertise and innovation, customers in capital-intensive industries can run their assets safer, greener, longer and faster to improve their operational excellence. To learn more, visit [AspenTech.com](https://www.aspentech.com).



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