Technology Company

Supporting smart agriculture in the snow country of Hokkaido

Sinra Inc.

Sinra uses Lenovo ThinkAgile MX Series for Microsoft Azure Stack HCI to develop an innovative IoT platform to help farmers and tackle the labor shortages hitting Japanese agriculture.

Lenovo

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Who is Sinra?

Working from offices in the Itabashi district of Tokyo, Japan, Sinra Inc. specializes in developing leading-edge IoT solutions. Formed in 2007, the company also offers a wide range of IT services, including systems design, implementation, operation, and maintenance.

In recent years, Sinra has focused on tackling the crisis facing Japanese agriculture. The industry suffers from a rapidly aging workforce and chronic labor shortages. As the result, Japanese agriculture needs to find new ways to support farmers and encourage more people to enter the industry—and this is where Sinra saw an opportunity to help.

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The
Challenge

Sinra planned an agricultural IoT platform that would reduce the workload involved in managing crop cultivation. The company drew inspiration from two sources: firstly, Mr. Katsuhiro Yamahata—Sinra's lead developer—had previously worked on the design of the 'Teru-chan' smartphone app, which sends automated notifications to farmers about changing conditions in their fields and greenhouses.

Furthermore, Sinra was motivated by the success of the White Data Center—a breakthrough project combining sustainable IT with agriculture. Based at the Sorachi Industrial Park in Bibai City, Hokkaido, the White Data Center uses winter snowfall to cool servers in summer, and waste heat from the servers to warm greenhouses and water tanks for cultivation of vegetables and seafood.

In the first phase of the project, Sinra aimed to develop, test, and launch a low-cost smart agriculture solution—the 'Snow Cloud Platform'. The objective was to create a tool that would help existing farmers to improve crop yields, and simplify the setup of agricultural businesses.

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"When I first learned about the White Data Center, I had an epiphany. I realized that we could create a cost-effective smart agriculture solution. Many agricultural IoT platforms are prohibitively expensive for ordinary farmers and new entrants to the sector. We wanted to develop an innovative solution that was simple, effective, and affordable."

Mr. Katsuhiro Yamahata
Lead Developer, Sinra Inc.

Selecting HCI to underpin agricultural IoT

To build and run the Snow Cloud Platform, Sinra selected the Lenovo ThinkAgile MX Series—a hyperconverged infrastructure (HCI) powered by Microsoft Azure Stack HCI that provides reliable on-premises servers and Azure cloud services. The company deployed two Lenovo ThinkAgile MX1021 Certified Nodes in the White Data Center, and acquired 1,000 tsubo (equivalent to 3,300 square meters) of land in the greenhouse to cultivate crops during a proof of concept (PoC) exercise.

IoT sensors in the greenhouse track temperature, humidity, and light, and send data to the Lenovo ThinkAgile MX platform. This data is analyzed and backed up using cloud services. When abnormalities are detected indicating a higher risk of pests, mold, or disease affecting crops, the system alerts users via the Teru-chan app, and automatically adjusts ventilation and temperature to optimize growing conditions.

Hardware
Lenovo ThinkAgile MX1021 Certified Node

Software
Microsoft Azure Stack HCI

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"The management console of the Lenovo ThinkAgile MX platform is very intuitive and simple, making it very easy for us to monitor our hybrid cloud environment."

Mr. Katsuhiro Yamahata
Lead Developer, Sinra Inc.

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Results

After completing the PoC phase, Sinra will launch the Snow Cloud Platform as an agricultural starter kit to the general market. Initially, the company will offer the cutting-edge IoT platform to farmers in the Hokkaido region, before expanding to the rest of Japan.

Sinra is confident that the Snow Cloud Platform will help to solve the crisis hitting Japanese agriculture. For example, the platform will make entering the sector easier than ever. "The system supplies all the know-how and expertise on cultivation issues that inexperienced farmers often lack, confidently helping anyone who wants to make a start in agriculture," adds Mr. Katsuhiro Yamahata.

Furthermore, the platform will enable new and experienced farmers to identify potential issues early before they impact quality of produce and overall yields. And using automation and IoT technologies to monitor growing conditions mitigates the need for additional workers to perform the work manually, providing an effective solution to labor shortages in the agricultural sector.

✓ Enables development of innovative IoT platform

✓ Removes barriers to entry to agricultural sector

✓ Improves quality of produce and crop yields

"Lenovo ThinkAgile MX Series is the reliable and scalable platform we need to expand our operations and bring the Snow Cloud Platform to more and more farmers. Working with Lenovo, we are well placed to support agriculture across Japan."

Mr. Katsuhiro Yamahata
Lead Developer, Sinra Inc.

Why Lenovo?

Sinra's target market for the Snow Cloud Platform is ordinary farmers, new entrants to agriculture, and people pursuing agriculture as a second business. As these groups typically have tight budgets, keeping operating costs as low as possible was essential when choosing an infrastructure.

Katsuhiro Yamahata explains: "We wanted something that was affordable, scalable, and would allow the use of on-premises and cloud technologies. The Lenovo solution met the key selection criteria—offering an attractive price-point, exceptional performance, and high levels of reliability."

How do you help farmers to maximize yields?

Developing an innovative app to help farmers with Lenovo technology.

Explore Lenovo ThinkAgile

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