Feeding 10 billion people
How Land O’Lakes is using cloud and IoT to help feed the future

Industry
Agriculture

Objective
Leverage agricultural technology to close the gap between genetic potential and real world results of crop production

Approach
Utilize advisory and professional services for hybrid cloud to develop an IoT-based crop data collection application built on Google™ Cloud Platform

IT matters
• Developed cloud-native systems for farmers to make data-driven decisions
• Enabled farmers to quickly and accurately store, share, and analyze crop data
• Automated data exchange from growers to retailers

Business matters
• Armed farmers with real-time data to make informed crop-related decisions
• Helped farmers produce 650% more corn on 13% fewer acres than in past
• Pioneered more connected, productive, and sustainable farming

In 1930, one farmer fed 10 people. Today, one farmer feeds 155 people. In 2050, one farmer will need to feed 250 people. To meet this exploding demand, Land O’Lakes, a global leader in precision agriculture, is using cloud technologies to revolutionize modern farming.

A farmer’s success is all about making the right decisions

From when to plant seeds, to where and how much to water and fertilize, farmers have always been faced with a litany of decisions. Teddy Bekele, VP IT at Land O’Lakes explains, “Most farmers need to make 40 major decisions throughout their crop’s growing cycle. These 40 turn into about 200 smaller decision points, all of which impact the success of a crop.”

Traditionally, farmers based their decisions largely off intuition. Today however, cloud, IoT, and Big Data technologies are efficiently capturing, ingesting, and analyzing data from multiple sources simultaneously, arming farmers with the real-time data they need to make more informed decisions. Better farming decisions translate to larger yields with fewer resources.

More mouths, fewer resources

The United Nations estimates that by 2050, the world’s population will reach 10 billion. The same study highlights that by as soon as 2030, global water demand will outstrip supply by 40%. Given the scarcity of water, arable land, and other input resources, a farmer’s ability to sustainably improve yields will be critical to feeding future generations.

Land O’Lakes is investing millions in agricultural technology to help farmers produce more food, with fewer resources and less environmental impact. The development of cloud-native systems that help farmers make data-driven decisions is at the heart of the Ag Tech Revolution.
“We are building applications that streamline data capture and knowledge transfer, all in real time.”

– Teddy Bekele, VP IT at Land O’Lakes

**The Agriculture Technology Revolution**

**Figure 1.** Ag Tech will close the gap between genetic potential and real world results. The development of cloud-based systems that help farmers make data-driven decisions is at the heart of this revolution.

**HPE Pointnext** worked with Land O’Lakes to develop a data collection application that securely and automatically enables data exchange between growers, retailers, and third-party providers.

Built on Google Cloud Platform with expertise from (recently acquired) Cloud Technology Partners (CTP), Data Silo enables farmers to more quickly and accurately store, share and analyze crop data. Core features include:

- Web-based upload of files to easily store large data sets
- User dashboard that allows for easy sharing
- Ability to rapidly search for information
- User groups and roles for control over who owns and can access data

The stakes are high, but breakthroughs in cloud and Big Data technology are enabling a new generation of cloud-enabled farmers. By leveraging these technologies, Land O’Lakes farmers are producing 650% more corn today on 13% fewer acres than they were 50 years ago.

From buried IoT sensors that can accurately predict future yields, to smart dashboards that integrate crop and field data from thousands of acres, the farms of the future will need to be even more connected, productive and sustainable. The world’s population is depending on it.
Why Google Cloud

Google Compute Engine provided a scalable Linux® environment that the Land O’Lakes operations team could support with existing monitoring and operations tools. These compute instances were used to run a web-based PHP application to support rapid development time, as well as both desktop and mobile interfaces. Data Silo is connected to a PostgreSQL database and leverages PostGIS libraries for complex GIS functions. All of these elements were able to run in Compute Engine and be deployed in a repeatable, automated manner.

Learn more at hpe.com/services/cloud