

UKKO AGRO IS A SMART AGRICULTURAL SOLUTION THAT HELPS FARMERS REDUCE THE AMOUNT OF INPUTS THEY NEED TO PRODUCE CROPS.

UKKO AGRO LEVERAGED CENG'S INFRASTRUCTURE TO VALIDATE AND SCALE TEST THEIR UPDATED PLATFORM IN PREPERATION FOR FUTURE USER DEMANDS.

Founded in 2017, Ukko Agro (named after the Finnish God of Agriculture) is a Toronto-based startup started by Ketan Kaushish and Avi Bhargava. With the goal of helping farmers produce more crops for less, Ukko Agro's predictive cloud-based platform helps farmers control pest outbreaks, while minimizing pesticide usage.

Their solution collects real-time data on weather patterns and plant physiology, telling farmers exactly when and how many resources they should use at a time ensuring that farmers use crop inputs only when required.



WE WANT MORE, WE WANT BETTER

Looking ahead, Ukko Agro sees that the demand of consumers worldwide puts the agricultural sector in a difficult position in terms of the quantity and quality of food. According to a UN study, the food industry as a whole needs to increase food production by 60% before 2050 in order to keep up with the world population that is predicted to increase by 2.3 billion people. With this, farmers often link increase in food production to increase in crop inputs such as pesticides, water, and fertilizer.

The idea of using more pesticides is contrary to the general consumer due to the health and environmental reasons behind it.

Instead, these consumers are opting for locally produced and/or organic based foods that require more land, time, and resources to produce, resulting mostly in lower yields which limits the overall production of food required to meet the 2050 demand. The big problem here is that consumers around the world want both more food and they want it better.

UKKO AGRO STEPS INTO THE FIELD

Focused on this worldwide problem, Ukko Agro helps farmers optimize the amount of crop resources (such as pesticides) being used while also maintaining the number of crops being produced. The company employs a sophisticated, end-to-end smart agricultural solution that collects local weather conditions and soil data combined with plant physiology in farmer's fields. The solution then analyzes the data and provides advisories to farmers on when and where to apply crop inputs. This is done through alerts, recommendations, and predictions through an online dashboard or SMS text messages. The end result of Ukko's platform is:

- Farmers save money on inputs in most years
- Optimized crop inputs often result in overall reduction
- There is a major decrease in crop loss claims

BACK FOR MORE

After completing their first project with CENG, Ukko Agro was able to show potato farmers that they could avoid crop damages and reduce pesticides by 25%. In return, this would save an average of \$40 per acre in costs. Seeing the benefit of working with CENG previously, Ukko Agro now wanted to:

- Validate and demonstrate the second version of the Ukko Agro platform, targeting more crop types and verifying its function in a public cloud environment
- Scale-test their platform to ensure that it meets or exceeds their business goal of running a total of 600 sensors with 100 farmer users in the next 18 months

CENG MEMBERS



PROJECT SETUP

In order to set up this project, Ukko Agro connected their platform, running externally in AWS, to a project space in the CENGN Cloud Testbed. Through the CENGN infrastructure, Ukko Agro was able to simulate sensor and user traffic coming externally to the Ukko Agro platform, just as would be the case with real deployments.

This project also featured a mix of real and simulated sensors. The 10 real sensors enabled functionality testing to the second version of the Ukko Agro platform, ensuring that the information collected was both accurate and compatible with the platform's AI. At the same time, mass amounts of simulated sensor traffic tested the scalability, measuring the ability of the solution to perform at much larger loads, as well as defining the resource requirements and costs when running incrementally increased amounts of sensors and users on the network. During the testing, CENGN provided its expertise on monitoring, helping Ukko Agro develop a project set up that could better identify bottle necks or areas for improvement within their platform.

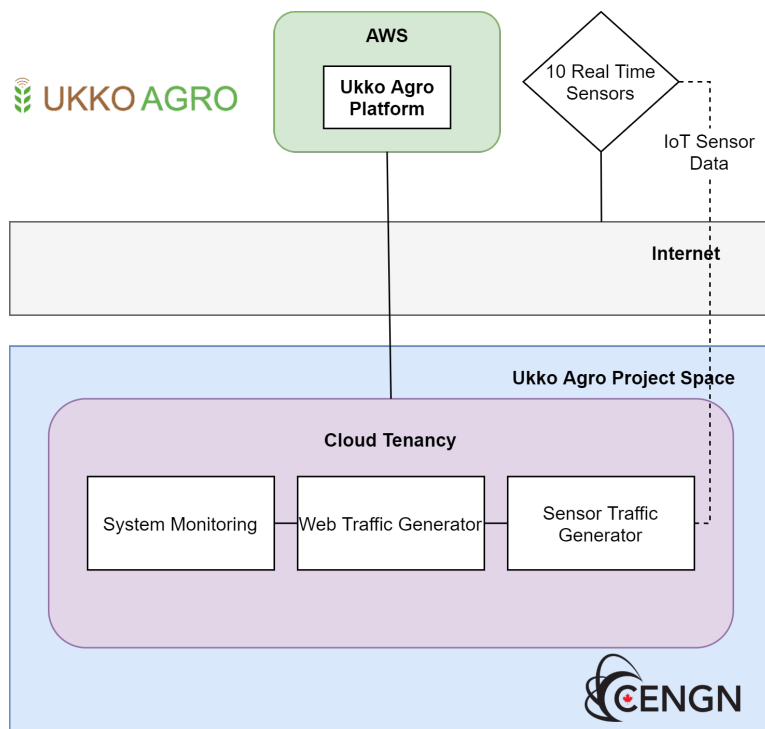


Figure 1: Ukko Agro's Project Space on CENGN's Cloud

RESULTS

After completing the testing, Ukko Agro came out with the following conclusions:

- There were no issues with data coming in from the 10 real sensors
- The improved version of Ukko Agro was able to handle between 5,400 and 6,000 simulated users at once (over the 600 goal)
- And the platform was functional, providing real time data to users

CENGN ADVANTAGES

Overall, Ukko Agro was able to take complete advantage of the next generation network technology to test the functionality and scalability of their upgraded platform. They were also able to take advantage of the CENGN team's expertise, monitoring and providing additional insights about the simulation systems throughout the project. With this testing complete, Ukko Agro walks away with important information on how their platform can be further improved, also having confidence that they will be able to meet their business goals over the next 18 months with their dependable platform.

FARMING THE FUTURE

Finishing their second project here at CENGN, Ukko Agro can now move forward with an improved version of their platform providing farmers with actionable data items to produce their crops with less resources. Their cloud-based platform revolutionizes the agricultural industry, changing the way that farmers will grow, tend, and cultivate their crops in the future. With the assistance of Ukko Agro, the agricultural industry will assist in meeting the 2050 goal in doubling food production while also limiting the amount of pesticides used when growing food.