CASESTUDY

PUSHING THE LIMITS OF COMMUNICATION TECHNOLOGY

Making the agricultural sector sustainable & resilient to climate change with Private LoRa

SMART FARM SENSING

Drought caused by climate change is a major problem, also in the Netherlands. This has serious implications for agriculture, and therefore for our food production.

Using intelligent sensor data to support the agricultural sector to make farming resilient to climate change and increase productivity. That's the mission of Smart Farm Sensing. By combining satellite and sensor data and ground observations, they give global agricultural companies the opportunity to reduce water consumption. As well as better protect their crops from pests and diseases.

They offer agricultural companies a plug-and-play end-to-end solution. From a Private LoRa network with various sensors and a cloud-based data platform to complete smart irrigation systems including control of pumps and valves in the field.

TECHNOLOGY NECESSARY TO IMPROVE FRUIT TREE SECTOR

The seed for Smart Farm Sensing was planted by a request from a date grower from Saudi Arabia. For his 50,000 date palms, he wanted a solution to detect pests attacking the palms.

Laurens Bierens, Managing Director at Smart Farm Sensing, says: "*Dates are the most important agricultural crop in that region. A very valuable commodity that suffers greatly from drought and pests. There was a real need to use technology to improve the fruit tree industry. Improve productivity, better pest protection, save more water and therefore have higher yields.*"

Farmers make extensive use of time-critical systems, such as an irrigation system. When the button is pressed, the system must start or stop irrigating immediately. There should be no delay. Laurens: "*Controlling such a system with a public LoRa network? Forget it! Then we can control one valve and nothing else happens. In contrast, we need to be able to quickly control 10 valves at once. That's why a customized Private LoRa network is ideally suited.*"

ONE GATEWAY PROVIDES CONNECTIVITY FOR AN ENTIRE AGRICULTURAL FIELD

Smart Farm Sensing uses Private LoRa networks with Kerlink gateways iFemtoCell Evolution and iStation. They supply end-to-end solutions to customers worldwide where they provide the connectivity, required sensors and their AgrIOT platform. This solution is highly scalable.

Laurens says: "*With LoRa, we are setting up a total concept and are more independent of third parties than with NB-IoT or LTE-M.*

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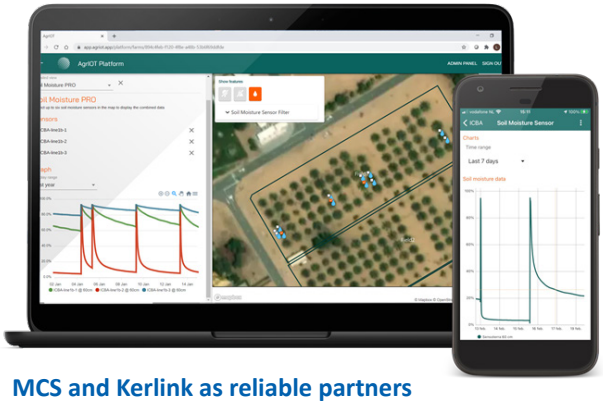
The big advantage of LoRa is that it is long range. With one Kerlink gateway, you can provide connectivity for an entire agricultural field. Even if you connect 1,000 sensors to it, you only need one data connection that you pay for. You don't pay per sensor like with LTE-M, for example."

Well-informed decisions with AgrIOT platform

Their digital AgrIOT platform collects all available data. From sensors, satellites, drones and specific farm data sources. This platform allows users to make informed decisions, visualize their data, monitor processes and, for example, remotely control irrigation systems.

AgrIOT is sensor and data agnostic and thus can collect data from many different sources. The platform is cloudbased and the data is fully protected.



MCS and Kerlink as reliable partners

According to Laurens, it is worth using good quality for systems. "*Reliability that the solution always works is the most important thing. That's why we use Kerlink gateways. It's good hardware and just works, even in the desert! Kerlink Wanesy is well put together and interfacing with our AgrIOT platform works great. It's very user-friendly.*"

MCS has been appointed by Kerlink as a Value Added Distributor in the Benelux. This is how Smart Farm Sensing was introduced to MCS for its LoRa hardware. "*MCS knows what they are talking about. We are guided well when new products are introduced or when there is a problem. They are not a purely sales-oriented club but a reliable partner that supports us well.*"

MORE SUSTAINABLE USE OF WATER WORLDWIDE

Smart Farm Sensing has customers in Bahrain, United Arab Emirates, Saudi Arabia, Jordan, Australia, Switzerland and the Netherlands, among others. In total, they use about 15 LoRa gateways. An average Smart Farm Sensing solution consists of a LoRa network, weather station, 25 sensors and 25 valve actuators.

In this way, they help farms use water more sustainably. This sustainability goes hand in hand with productivity improvement. Smarter irrigation increases productivity and saves water and money. Healthier crops need less disease control.

High-quality fruit farming for economic growth

However, high-quality fruit farming is also of economic importance. Laurens: "*This technology improves fruit cultivation, which increases exports. This also helps economic growth, especially in developing regions such as Jordan. In addition, water and climate are important natural constraints for some countries. Consider the Gulf region, for example. With this kind of technology, food supply becomes more efficient and there are more opportunities to produce food locally.*"

Plug and play LoRa solution

The private network is part of a complete plug-and-play solution. Smart Farm Sensing configures all systems in the Netherlands before sending them to the foreign customer. "*In Australia, we have a high-profile customer who has our Private LoRa network in three remote locations with sensors and weather stations that they can control with apps.*

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And we've never been to Australia. Every customer should be able to have the solution installed within half a day to a day, even if he has two left hands. I am proud of that!"

Adapting to local customer needs

Each country has its own specifications and dynamics - there is no one size fits all. That's why Smart Farm Sensing now works with integration partners in Switzerland, Hungary, Gulf States and Australia, among others. People who know the local needs of their customers and the market and to whom Smart Farm Sensing can adapt their systems. These local integration partners can do the installation with the customer.

GO FOR IT

A few points of consideration of Smart Farm Sensing for organizations also interested in a Private LoRa network:

- **Cheap is expensive**. The quality of products online is not always guaranteed. Don't be too influenced by low prices and choose certified hardware like Kerlink. Then you can be certain that you can build a secure solution.
- **Reliable partner standby**. To set up a Private LoRa network really well, you need to be surrounded by the right people and have sufficient knowledge. Make sure you have a reliable partner by your side to support you in this.
- **Think in solutions**. LoRa may have limitations for some applications. However, you can work well around this or solve the limitations. Think in possibilities: if Class A LoRa sensors don't suffice, Class C sensors might.

SUSTAINABLE INNOVATIONS EMBRACED BY YOUNG FARMERS

Smart Farm Sensing sees increasing demand for smart technologies that save water in agriculture and food and green spaces. Laurens: "*LoRa is not yet widely used for smart irrigation. The older generation of growers are often traditional and want to open and close the tap themselves. But there is a younger generation emerging who are embracing precisely these kinds of innovations for sustainability.*"

He also sees more opportunities for landscaping, especially at a government level. "*Smart buildings are already being done a lot. However, outdoor living spaces are still secondary. I expect to see more collaboration between utility management, real estate, smart city applications and landscaping. Beautiful parks, water management and golf courses, it can all be done much smarter!*"

ABOUT MCS

Making complex technology simple. That is our mission. So that everyone can make carefree use of innovative Internet of Things (IoT) solutions. And we make people's daily work and lives easier, safer and more sustainable.

We do this by working with carefully chosen partners. We support our partners in setting up and delivering successful Managed IoT solutions and Private networks, such as Private GSM (2G), Private LTE (4G and 5G) and Private LoRa/NB-IoT. We also provide the necessary hardware and software components for these networks.

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