



Llanelli Farm

Solving agriculture's main challenges with a Cisco IoT solution

Summary



Outcomex has developed an IoT solution for Llanelli Farm, utilising cutting edge wireless technologies and advanced software development techniques. The solution enables farmers to track and identify livestock, manage water tank and dams levels, and surveillance the perimeter of the property. The project helped Llanelli streamline lengthy activities, allowing their staff to utilise their time on other areas and make educated decisions about what to do next.

Client



Llanelli is a 1,300 acres family farm located in Bathurst, NSW. With its 1,500 head of sheep, Llanelli primarily targets the lamb market. The new owner recognised early on that taking the path of digital transformation was the best approach to tackle their challenges and reduce their operational costs.

Opportunity



Llanelli faced two main challenges in the daily management of their business; livestock tracking and water management. Every single animal needed to be counted and managed manually once a month; a lengthy and tedious process prone to human error. Additionally, with eleven dams and three water tanks spread across a 1,300 mountainous land, Llanelli's staff lost a sizable amount of time travelling to each dams and tanks to verify water levels and action the appropriate measures. Water being the most important element on a farm, they had to perform that task daily, and multiple times a day during draughts. Llanelli chose Outcomex to design and implement an IoT solution that would help them solve those two problems.

Solution



Through a solution combining Cisco IoT and Enterprise Networking products, third party sensors, and Farmdeck, an in-house analytics platform, Outcomex enabled Llanelli to track and identify livestock, manage water tanks and dams levels, and surveillance the perimeter of the property.

Due to the complexity of the landscape, three different wireless technologies were deployed; one for the livestock management, one for the cameras, and one for field sensors management, utilising farmer connectivity and Lora. The wireless solution is supported by Cisco Router, Switch, and LoRa gateway. Cisco 6400 Cameras have been installed on the field to provide analytics on the sheep movements and give visibility to the owners on everything happening on their land.

One of the key differentiators of this solution is the distance within which the RFID reader can track the livestock. To increase the tracking distance to 8m and get a more accurate sheep count, we developed the first high frequency sheep tags in Australia. In order to keep the sensors and livestock communication overhead as lightweight as possible, we have chosen the IoT connectivity protocol MQTT, ideal for remote locations.

Outcomex easily and economically deployed this wireless monitoring solution through Semtech sensors in dams and tanks to address issues related to water management. With their low-power operation, extended battery life, and strong signal range in rural areas the Semtech sensors were perfected for Llanelli's IoT project. All data generated through those sensors are then aggregated on Outcomex's 'Farmdeck' portal, forming the ultimate 'Smart Farm'; increasing efficiency, staying competitive, and creating sustainability.

Solution



The solution consists of:

- Cisco Solution for LoRaWAN
- Cisco 6400 Camera
- Semtech Sensors
- Custom High Frequency RFID sheep tags
- Outcomex 'Farmdeck' online platform

Impact



By providing access to data and analytics for water (levels, leaks, volumes and usage) and livestock (track, count and identification), Outcomex has enabled the Bathurst farm to more proactively address their many challenges, such as drought preparation, tank damage, stray livestock, and budget constraints. Using IoT has helped Llanelli to streamline their processes, provide valuable data, improve analytics and shorten their time to action. To make sense of all the data, 'Farmdeck' has provided them with a user-friendly interface consolidating all the information collected by the sensors and cameras on the farm.

Ben Morgan, Co-owner, Llanelli Farm: "This solution has helped me and my family to resolve our two main challenges on the farm: livestock tracking and harvesting water, allowing us to use our time to improve other areas of the farm. Outcomex has been great at understanding our needs and at developing a customized solution and platform for us."