Enabling Smart Farm Analytics
Single Source of Combined Agricultural Data Empowers Post-Secondary Research

Overview

New commercially available technologies are being introduced into the market across industries to assist workers in optimizing their operations. With the emergence of new sensing, IoT, and wireless capabilities, many traditional ways of working are being disrupted.

A post-secondary institution in Alberta with a focus on agriculture was in a unique position to help current and upcoming farmers learn how to use these new technologies. Additionally, the institution had an opportunity to partner with industry and jointly conduct research into smart technologies in a farming environment. They knew that to accomplish this they needed to create a smart connected farm and gather partner data for analysis.

Industry: Education
Location: Alberta, Canada
Size: 1,350 students; 550 staff

Company Bio

The company is a post-secondary institution located in Alberta with a focus on agriculture.

The Challenge

The goal was to capture data and transmit that information back to a centralized location for analysis with a combination of agriculture specific smart technologies along with technologies not specific to the industry. This presented challenges in defining what information should be collected in the first place. Combining farming specific data with telemetry sensor data presented a challenge of how to combine the information together.

There was the additional challenge that every technology partner had a proprietary data format and method for data collection. This made it difficult to access and combine the data into an education-specific smart farm application. Some partners had publicly available data sets that could be manually downloaded through a website while others required programmatic access through their own application interfaces.

Developed Method for Collecting Disparate Data	Future Proof Data Mart for Smart Farm Data Collection and Storage	Empowered Students with Access to Smart Farm Data

The Solution

Raven Bay met with representatives from the technology partners to understand their data offerings and how the post-secondary institution could access the information. With this research, we were able to design a data architecture that provided capabilities for programmatic and manual data capture.

We created a new data model that combined all the partner data sets into a single repository of data for use in analytics. The data model was designed around captured data values combined with identifiers to categorize the information, enabling the slicing of information in different ways or aggregation of the information for analysis.

The Results

The design that Raven Bay created provided a single repository for educational and research analysis and a foundation for future partners and technologies. The data model overcame the challenges of disparate data sources and access mechanisms enabling consistency and usability of the data for educational purposes.

"Big data is being used to provide predictive insights in farming operations, drive real-time operational decisions, and redesign business processes for game-changing business models."

Agricultural Systems Vol. 153
"Big Data in Smart farming – A review"[1]