

Big Data Rides onto the Family Farm



Real-time Analytics For Better Farming Decisions

Close your eyes and picture a family farmer...OK. Do you see a grizzled veteran clad in overalls and a straw hat? Driving a rickety combine? Finger to the wind trying to guess the weather, his yield, or the best time to harvest?

Well, not exactly.

With the help of FarmLink® analytics software, a new generation of tech-savvy farmers (aka growers) is now able to better compete with larger corporate farmers using real-time data that merges yield estimates, local market value, and weather information previously unavailable to smaller growers.

About five years ago, FarmLink began as a software development subsidiary of MachineryLink Inc., which leases combines to farmers who don't want the overhead expense of owning the rigs.

Today it is part of the MyDTN suite of seamlessly integrated solutions. Its new DTN MarketVision™ tool uses several years of benchmarking data across millions of acres, plus local current season's weather data and local grain (corn and soybean) prices.

Farmers running the web-based app on their PC's or iPads are now able to make informed decisions on critical issues like whether to scale up or scale down production, adjust irrigation, and better predict when to harvest crops. In other words, a constantly updated view of their farms' output potential.

A Very Tight Timeframe for Development

Getting MarketVision to market wasn't easy and required a great working relationship between Farmlink and MATRIX using some of the latest technologies and Agile software development processes. "We had an existing relationship with MATRIX supporting another app called Discovery," said Jane Tuck, Product Development Manager at FarmLink. "They were already embedded in our business and understood the fundamentals of what we were trying to do", she said. "That experience was such a good one that it was easy to discuss a larger relationship."

With a looming deadline to deliver a working product at a winter industry conference, Farmlink knew they had to expedite an SDLC originally estimated at 12 months -- to something less than half that time.



Solid Team Using the Latest Technologies

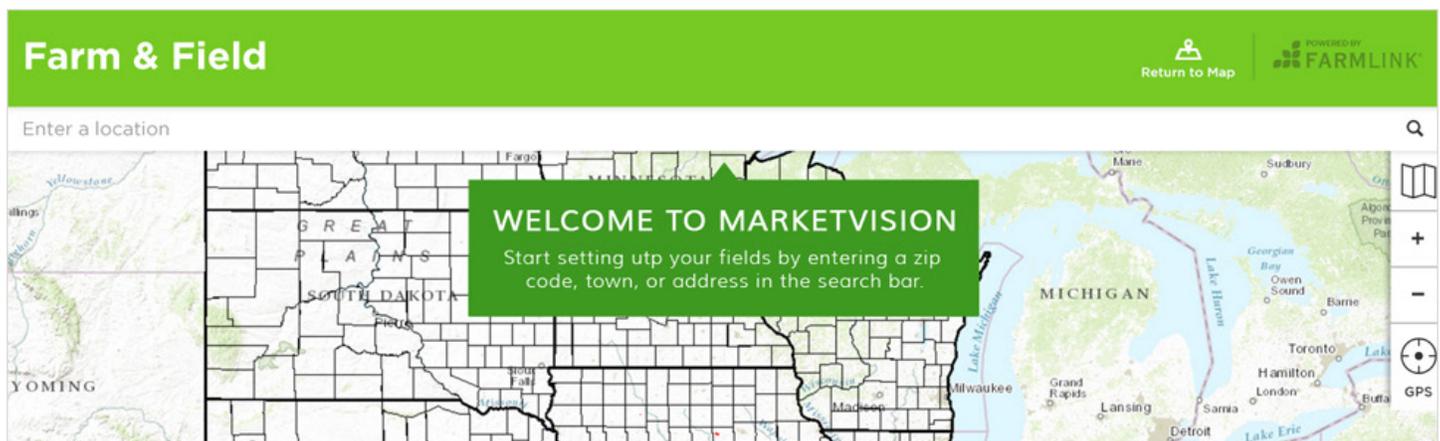
Darryl Allardice, MATRIX .NET Practice Lead, was brought in to manage the project. “Early on they were aggressive with their plans,” he said. “They wanted us to bring on a lot of people because they knew this was a big project and it would be a challenge to do this in a short time.” MATRIX believed that simply scaling development resources wasn’t the answer. Finding solid developers, giving them the latest technology tools, surrounded with Agile processes, was the key.

“I can’t say enough about the quality of people they added to the team,” said Tuck. “Every single individual was a good fit and meshed well. They were as invested as we were and showed the same amount of interest and curiosity that I would expect my own teams to show.”

Front-end React JavaScript Library

Teams were divided into front-end and back-end development groups working independently.

MarketVision is a Single-Page Application which the team implemented using the React JavaScript library. The component-based nature of React allowed for an easy and quick transition from UI mockups to UI implementation by enabling the team to quickly break down the user interface into reusable components. In addition, React’s small API footprint and promotion of unidirectional data flow allowed the team to move quickly with the implementation and back-end service integration of each of the components.



Back-end ASP.NET Web API Framework

The website back-end was implemented using the ASP.NET WebAPI framework. With the team’s strong background in .NET technology, using WebAPI to support this application was a natural choice. This framework made it easy to expose RESTful services which served out complex sets of agricultural and financial data provided by stored procedures in a SqlServer database.

It also provided powerful routing and parameter binding capabilities to support all the interactions needed by the front-end, while at the same time putting all the server-side power of .NET frameworks and the C# language at the team’s fingertips.

The MATRIX team is wrapping up the last remaining PSAPS to help the customer complete the final 2016 requirements, months ahead of schedule.

UI/UX: Drilling Down into the Data

Concurrent with the app development, the MATRIX UI/UX team created hundreds of wireframes and mockups to support the many screen variations needed to properly visualize all the data presentations required. The three graphic designers worked hard to stay one sprint ahead of the development group, so they could match the development pace, while also accommodating the inevitable changes that would occur.

MATRIX UI/UX Practice Lead Ryan Wright said his team had to balance the need to show a lot of dense data with desire to have a simple to use interface “Typically an app doesn’t have the magnitude of dense data that MarketVision does,” he said. “All these different ways to view and access data created some really complex screens. The client wanted users to be able to drill into one specific field, or view aggregated data from all the fields. And to do it with minimal clicks and easy navigation that wasn’t confusing even for novice users.”

Focusing on the Right Issues

Facilitated by a MATRIX coach, Agile training reinforced the basics of scrum -- how to create and maintain product backlog, prioritize backlog, set up two week sprints, and how sprints tied into the backlog and meetings such as sprint planning and perspectives.

“At the speed we were moving we had to be super Agile with teams running at their own pace and not waiting for others,” said MATRIX Solutions Consultant Nathen Grass.

Product owner Tuck did a great job focusing all the teams on the right business issues while other project issues were in flux.

“Jane was able to determine the most important requirements.”



said Grass. “She eliminated a lot of the noise, and helped the business understand that they would not get 100% of what they are looking for in this release.”

“Agile gave us much more than waterfall,” said Tuck. “If we had tried waterfall, we would not have seen concessions early enough to make the date. With Agile, everybody was aware where we were at all times, and what was minimally viable.”

“The constant communication that is inherent to an Agile team

was certainly refreshing and reassuring when we were running on all cylinders. It made it easier to see things coming together every day” she added.

What’s the result?

MarketVision made it to the show and its launch has been well received by the industry. Its performance and stability are all excellent (described as “speedy and snappy even though it is very dense with data” by Allardice.)

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