Beyond Software: John Deere's Success Proves Scrum Can Transform Innovation

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Background

John Deere has a track record of over 175 years of product innovation that has helped drive the evolution of modern agriculture. That experience, despite Deere's enviable success and widespread brand recognition, extracted a price: an organizational that had grown exponentially in both size and complexity. These by-products of nearly two centuries in business had left the company challenged to continue to innovate and deliver on its new ideas.

According to George Tome, head of Deere's Enterprise Advanced Marketing (EAM) project and program management – an enabler of many of Deere's recent breakthroughs – a combination of factors arising from the company's legacy structure were impacting its ability to innovate and to complete projects on ever-shortening schedules.

"We are extremely process-driven and primarily work on incremental innovations. This had served us well, but was not translating to the fast-paced needs of breakthrough innovation and business development," Tome explained. "Our workloads were uneven. And our complex communications needs hampered our ability to collaborate on problems and issues in a timely fashion. We needed to become a learning organization with higher team engagement – and to move at a much faster pace."

What Tome and EAM were experiencing were many of the creative and operational bottlenecks common to a traditional, top-down "waterfall" organizational structure. In 2012 EAM's leadership began to seriously consider radical changes to the way EAM did business since it was not moving new innovations into Deere's commercialization process at an acceptable rate. There were, at any one time, at least 20-30 projects in progress – most under different managers – and employees were spending an inordinate amount of time switching between projects rather than finishing them. As a result, progress on any given project was sporadic, and the divided attention of employees hampered collaboration between working groups.

It became clear to Tome that what EAM needed was not just a change in how they approached a project, but in how they conceived of a project. Jason Brantley, the director of EAM envisioned the division as a "learning organization" in the mold of Toyota in which employees are encouraged to learn on an ongoing basis and the organization seeks to continuously evolve itself to better deal with increasing complexity in a rapidly changing marketplace.

"I come from a software background and was familiar with the Scrum/Agile methodology," Tome said. "I wondered if we could apply those same principles outside of software – without the tech-speak. I talked to Jason Brantley, and Derek Schmidt [the manager of EAM's center in Moline, Ill.] and we agreed on one fundamental point: Simply implementing Agile wasn't enough. To make Agile work at John Deere, it had to be adapted to our type of work – innovation and business development – and to each of our local environments. This would allow our people to change how they work and interact. That's the power of Agile."

Tome sought out the guidance of Joe Justice, ████████████████████ ████████████ to guide the EAM team through its period of realignment around Agile principles. Aiming for a quick launch, EAM brought in Justice to lead a week-long on-site training session, including a two-day ████████ Scrum Master ██████ class, a day-long session to define and launch the Scrum team, and two days of intensive, hands-on coaching -- all components of Scrum Inc.'s proven approach to implementing Scrum.

The Problem

Justice began his work with EAM at Deere's Moline Technology Innovation Center (MTIC) facility in Moline, Ill., by conducting a root cause analysis of the factors that were hampering their productivity and pace of innovation. It became immediately apparent that working on multiple projects was squandering employees' time and disrupting their focus. According to Weinberg's Table of Project Context-Switching Loss, a tool used to measure time lost due to switching between projects, when an organization has five or more projects "in flight" simultaneously, employees spend 75 percent of their time switching between them. EAM had 27 projects in flight.

"The table only goes up to five projects," Justice said. "I estimated that they were spending about 95 percent of their time switching from project to project."

Working under Justice's coaching, Tome and EAM reorganized and launched the MTIC team using Scrum tools and concepts to confront the "waterfall" logjams that were holding them back.

"Our initial goal was to support the development of the MTIC team," said Tome. "Within the Scrum framework we wanted to give the team domain-specific tools and best practices, and prove the value of this approach."

Deere dubbed this new approach "XI," and established a goal "to think unreasonably big, work as iteratively and as small as practical, deliver faster than

what's been possible, and adjust and adapt constantly."

Making Changes

Things quickly started to change as the XI pilot took root: project velocity doubled in just two months. In one case, Deere went from idea to "first-pass yield" (FPY) – an approximately 90% prototype – in eight months, a process that previously would have required 18 months or more. In other cases, critical path activities have been trimmed from nine months to 2 months, Tome said.

The origins of this remarkable jump in innovation velocity can be found in the environment created by the Scrum framework. Teams prioritize their work and establish goals, within the context of defined periods of time called "sprints." In EAM's case, each sprint was two weeks in length.

Within the parameters of each sprint, projects are broken down into distinct user "stories" with "story points" assigned as a means of ranking each story's difficulty relative to one another. By tracking the number of points achieved during each sprint, the team can predict a consistent output. When a team knows the number of story points it can execute in a sprint, and when it measures that against the total estimated points of a particular project, a delivery date can be accurately forecast.

"In the beginning, we found that the effort expended on a given project did not match leadership's priority for the project. While resources were fully allocated, we saw that spreading this allocation across so many projects meant that much of the time we were delivering very little customer value with every sprint," Tome explained.

EAM found that the Scrum framework, particularly the ability it imparts to measure project velocity, enabled them to establish priorities with a clarity that they hadn't possessed before.

"We were able to ask, 'Is this enough to keep a project going?'" Tome said. "In this way, we could narrow down which projects were worth our time. Everything we did had to tie back to customer value. It helps you to identify waste in your process, and you find that there are deliverables that can be scaled out for specific projects. It really drove home that people were working on the highest value deliverables on the highest-value projects."

One of the first steps Tome and the MTIC team took was to confront the existing set of expectations regarding the number of projects under way and the expected delivery date for those projects. Once the managers in EAM saw the leaps in velocity being achieved by XI, they began to trust the teams and the Scrum process. They asked the teams to prioritize the projects, and establish how many they should target for completion.

"Data made this easier," said Justice of this confrontational process. "Once they had data proving their increased velocity, they could share this with other managers and decide which projects to prioritize."

This had the effect of accelerating the transition away from the concurrent

project model that had been prevalent under EAM's waterfall culture. The MTIC team was able to say confidently to managers that they needed fewer projects rather than more.

Built into each sprint is something called the "happiness metric," a review of the process which allows the team to gauge morale. Each team member is asked how he or she feels about the value, measured on a 1-to-10 scale, that they were able to deliver during the previous sprint. (EAM chose to call this the "motivation metric" because "happiness metric" didn't really fit Deere culture, according to Tome.)

"We found that there is a sweet spot for the team in terms of the motivation metric," Tome said, "and if they're in that spot, then we're doing well. People are happy, and we're seeing improvements in velocity and quality.

Solutions

Now that the MTIC team was working on fewer projects at a time, they estimated that they could complete more over the course of a year. Managers, still not entirely free of EAM's waterfall legacy, had to ease the organization into accepting the notion that they would undertake fewer projects concurrently. As data continued to aggregate, as XI's innovative velocity continued to improve, and as trust and transparency grew between teams and managers, the number of projects in flight dropped to about three per technology innovation center team.

Justice coached the MTIC team to do "one thing every week to be faster and happier." In project management parlance, this is known as a process improvement. In Scrum and Lean terminology it is called a *Kaizen*, Japanese for "Good Change." In 16 months, the team was innovating at a velocity 7.2 times higher than they had under their waterfall culture. Their *Kaizen* soon began to revolve around how the team could cope with the relative inertia of Deere's legacy operations.

The transformation under way at EAM's MTIC facility did not go unnoticed by the rest of the Deere organization. In January of 2013, roughly three months after Justice began working with the XI team in Moline, he and Tome flew to India to introduce Scrum to the EAM facility there. Within two months, the India site saw their velocity double, just as it had in Moline.

Over the next six months, three more EAM sites began Scrum training – in Brazil, Germany, and Illinois. Each site saw its velocity double within two months of Scrum implementation, suggesting that Scrum is effective across all cultures and proving its transformational impact in non-software environments.

Tome was pleased with the improvements he saw in both velocity and in the happiness of the EAM team members, but he wanted third-party validation. He got it in the form of the John Deere's Employee Experience Survey, an assessment of employee morals that is taken every two years. In the previous survey, conducted before Justice was brought in to implement Scrum, EAM scored in the bottom third of

Deere employees in terms of managerial effectiveness and employee engagement. In the next survey, roughly 23 months later, EAM scored in the top third of Deere employees. According to Tome, this sort of rapid turnaround was virtually unheard of at Deere.

"Key to the improvement in employee satisfaction at EAM, as well as its gains in velocity, is the transparency that is built into the Scrum framework," Tome said.

"We kept metrics from Day One," he said. "Anyone within Deere can look at our metrics, from entry-level employees to senior leadership. This has led to very free conversations. People are open and trusting in ways I would never see in the past. Scrum forces that transparency, but it makes it easier to ask tough questions. With Scrum, everyone on the team is thinking about, 'How do we move more work through the system?' Transparency, because it's part of the process, seems really natural. We've developed a lot of trust."

Scaling Success

The success of XI and EAM is leading to the spread of Scrum to other non-software divisions of Deere's operations, Tome said. In October of 2014, a production system strategy team began Scrum training, followed in August of 2015 by six teams within Deere's larger North American marketing group. Even Deere's "Hard Iron" manufacturing division is getting on board with a series pilot projects.

"As each of these teams realizes gains in productivity and employee satisfaction,"

Tome said, "I expect to see Scrum catch on in more and more aspects of Deere's operations."

Today, more than 150 John Deere professionals are ███████ Scrum Masters, many of who work in non-software environments.

"It's a remarkable transformation," Tome said. "We've become a value-driven operation with greater transparency. We have lean, highly engaged teams who've created a learning organization. We're now a highly sought place to work. We're producing more innovation, and we've progressed beyond incremental improvements to step-function innovations – which are meeting our strategic goals.

"Scrum Inc., has been extraordinarily helpful to John Deere as we continue to grow and evolve in our adoption and use of the Scrum/Agile methodology.

"I hope this puts to rest the myth that Scrum crushes innovation," he said.