JOHN DEERE

ABOUT JOHN DEERE

Established in 1837, Deere & Company is a world leader in providing advanced products, technology and services for customers whose work is revolutionizing agriculture and construction - those who cultivate, harvest, transform, enrich and build upon the land to meet the world's increasing need for food, fuel, shelter and infrastructure. The company employs over 75,000 people and in 2021 generated revenues of over USD 44 billion.

John Deere, in collaboration with Basis Technologies, turned an SAP DevOps vision into reality with an integrated, event-driven change process that improves quality, reduces risk, decreases developer cycle time and increases developer satisfaction.

The Challenge

In 2019, John Deere's Global IT team adopted an Agile Operating Model (AOM) aimed at redefining the way they worked. The model was grounded on the principle of delivering high quality customer-centric solutions more quickly and efficiently, but the path to enterprise speed and agility was blocked: slow, inefficient change management processes couldn't provide the transparency needed for effective risk mitigation.

A more modern, automated approach was required to move changes through complex SAP landscapes quickly without compromising quality.

The Solution

Working in partnership with Basis Technologies, John Deere created a fully automated solution which integrates ActiveControl – Basis Technologies' SAP DevOps automation tool - John Deere's SAP landscape, and John Deere's Service Management (ITSM) system. This new, forward-thinking approach in managing SAP change is helping the company to advance its agile transformation, accelerate delivery of value to customers and drive towards a future of cleaner, greener, smarter solutions.

The automated solution – which also leverages cloud technologies, an OIDC provider and an open-source CI tool - has eliminated manual effort, reduced risk, provided far greater visibility, and increased both speed and productivity.

> "ActiveControl, with its out-of-the-box APIs, was a catalyst for us to improve our processes, providing more transparency into the SAP change management process and giving us the hooks needed to integrate with our internal systems in a more efficient way." — *Justin Brown, Senior Software Engineer, John Deere*

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> Part of our transformation journey is about demystifying the perception that DevOps practices & automation can't be applied to SAP. While there are unique challenges, we've taken several innovative steps that prove this space can deliver thin slices of value to our customers at industry-leading speeds we – and others – might previously have thought were unattainable. — *Josh Edgin, Group Engineering Manager – Manufacturing Operations, John Deere*

Adopting an Agile Operating Model

John Deere has been a technological innovator since the company's founding more than 180 years ago, but today John Deere's technology leadership extends beyond physical machines. A new Smart Industrial Strategy, announced in 2020, reflects the fact that software is more central than ever to the value delivered by the company - from the platforms powering customer-facing innovation, to enterprise applications like SAP that underpin operational success.

The company's Global IT function has been at the forefront of this journey and in 2019 recognized the need to evolve into a more holistic, business-led Agile Operating Model (AOM). They established new ways of working to better support innovation across the entire technology stack, employing agile software development as a crucial part of their approach to technology modernization.

A key component in the Agile Operating Model has been Global IT's investment in developing and attracting the digital talent needed to propel the company into its third century of success. Their multi-pronged approach embraces both an immersive, coach-led learning environment that focuses on building or improving agile, product and technical skills, and a comprehensive array of self-paced learning options.

"It was very evident that [agile teams] move at a completely different pace, with the same supporting infrastructure, tooling and so on. That experiment created a buzz of, 'how do we replicate that in SAP?'. We are an enabler towards the speed of the rest of the organization so the quicker we can improve our internal software that helps support our business, the quicker other teams can then pivot for the needs they have in their value stream," explains Adam Brunner, a DevOps Coach at John Deere.

The need for automation to support agile SAP change management was clear, but initial attempts to adapt legacy SAP tooling to the new agile paradigm were unsuccessful. ActiveControl from Basis Technologies was chosen to provide John Deere with the capabilities required for agile success, along with the integration capability that would enable more effective collaboration with product owners and the rest of the business.

Outcomes of Agile

66%

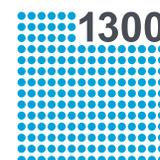**66% faster** time to market following adoption of agile

2x
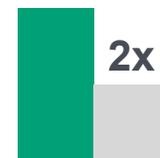
2x more output produced by agile teams

Benefits of Integrated, Event-Driven Change Process

32%

32% decrease in SAP developer cycle time after adoption

1300

1300 hours saved by SAP developers in under 1 year

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The Impact of Agile Transformation

John Deere's operating model transformation provided a unique opportunity to explore how the company could build continuous integration into their overall software delivery pipeline and improve developer experience. While the journey is far from complete, John Deere is seeing early evidence it's moving in the right direction. Time to market has decreased by more than two thirds, while output (functions delivered) have more than doubled for teams who have completed their foundational immersion coaching period.

These foundational successes of the broader operating model are just the beginning. In less than a year of active operation, tangible benefits of the new SAP change management solution have also become apparent. Automation has made it possible to reduce individual change complexity and associated quality risk, resulting in a 32% decrease in developer cycle time from config to quality and a reduction of more than 1300 hours of SAP developer overhead in managing change.

The Vision: An Integrated DevOps Pipeline

The John Deere team always knew that automation would be necessary to drive greater alignment of SAP change management processes with the AOM, but they quickly developed a broader vision, targeting a future state which would deliver greater agility and customer value. Their goal was to integrate SAP into a wider DevOps pipeline, aligning SAP even more closely with standardized tooling and processes to further increase speed, mitigate risk, and enhance visibility.

John Deere's culture of cross-team collaboration, amplified through the AOM immersion activities, provided the ideal platform to make this vision a reality. The Manufacturing Developer Enablement team partnered with John Deere SAP Basis, John Deere Change Management, Basis Technologies, and John Deere's DevOps coaches to understand the tool chain that was already in place, how it could be leveraged, and lessons that had been learned elsewhere.

"We started with quite an SAP-centric mindset in our initial tool chain plan but came to realize it wouldn't be the most efficient, scalable or maintainable way to set things up," states Johanna Acevedo, IT Service Management Product Manager at John Deere. "Fortunately, we didn't have to deal with the functional silos some companies struggle with and were able to bring DevOps coaches into the SAP conversation to help us develop a more effective strategy."

This collaborative approach provided the foundation for creation of an integrated SAP software delivery pipeline managed by ActiveControl, in which relevant automation can be triggered at any control point; for example, kicking off an automated test or updating the status of a change ticket.

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Building the Pipeline

John Deere's cross-functional team began their journey towards a more integrated pipeline with value stream mapping – commonly used in DevOps to visualize value-adding and wasteful process steps. They created a value stream map of SAP change which clearly showed duplication of efforts between ActiveControl and John Deere's Service Management tool of choice.

To remove this 'waste' and further improve SAP agility the team wanted to take advantage of automation already used for web code changes, where tickets for 'Standard Changes' were automatically updated in the Service Management system via a CI/CD tool and execution of a series of APIs.

John Deere worked closely with Basis Technologies to explore how ActiveControl could be connected to this tool chain, initially exploring an existing Jenkins integration. "We quickly realized that we could take advantage of 'out-of-the-box' capabilities already available by leveraging existing APIs from ActiveControl, our Service Management tools, Jenkins and other CI/CD tools," recalls Johanna Acevedo.

However, the advanced workflow envisaged by the John Deere team required creation and maintenance of additional custom code to augment the available integration options. The close partnership between John Deere and Basis Technologies allowed the John Deere team to share their expertise, learning and ideas for technical improvement through an iterative feedback process, ultimately resulting in development of new product capabilities by Basis Technologies.

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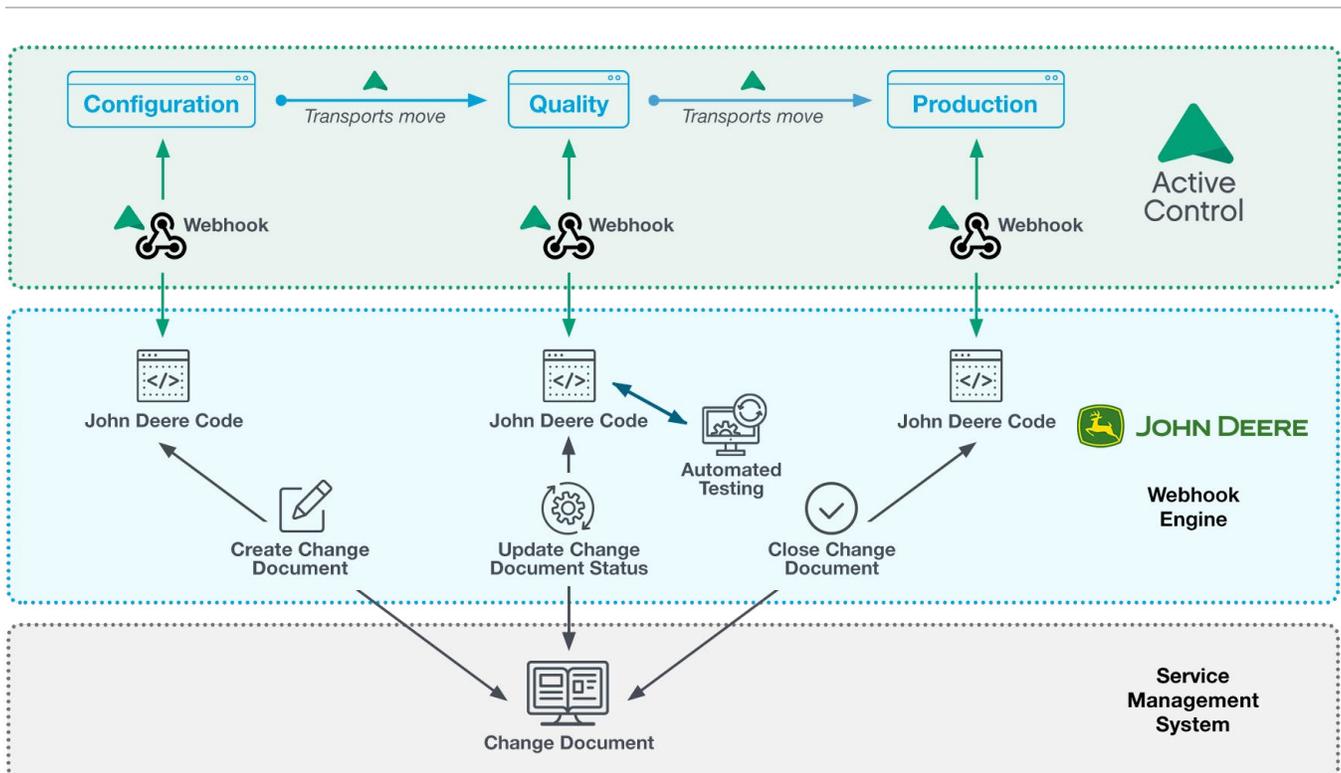
ActiveControl has enabled John Deere to implement a webhook engine with centralized ITSM integration.

ActiveControl can now notify webhook receivers when the status of an SAP development changes, enabling John Deere to implement a webhook engine with centralized ITSM integration as part of their SAP change management process. This brings to life a more complete end-to-end delivery pipeline, without the need for additional custom code.

The new integrated pipeline automatically updates the central ITSM system, providing stakeholders with accurate, up-to-the-minute information on SAP change. And it comes with the added benefit of looser coupling between tools in the workflow, allowing for greater autonomy, more flexibility, and easier future maintenance. "For us, ActiveControl is to SAP as GitHub webhooks are to web development," summarizes Adam Brunner.

John Deere and Basis Technologies plan to continue working together to explore other ideas and potential ActiveControl enhancements which could support the creation of even more advanced CI/CD pipelines.

"More and more companies are adopting agile and DevOps in SAP, but it quickly became clear the John Deere team had both the ambition and expertise to really push the envelope in terms of connected automation," adds Eran Kreigshauser, SAP DevOps Architect at Basis Technologies. "Working closely with them gave us new insights into how an integrated tool chain could work in a really large, complex SAP landscape, and where new ActiveControl functionality could provide even more value."

Leading With Quality

The John Deere team also understood that quality would be a critical element in their drive to be more agile, and to demonstrate that DevOps practices and automation can be applied to large SAP environments. After all, more risk was never going to be an acceptable side-effect of moving faster.

The team's effort to reduce batch sizes illustrates this quality focus. Smaller units of change help to increase speed by reducing the effort required for delivery of value. They also reduce overall quality risk, lower the chance of Production issues, and make fixes easier on the rare occasions when something unexpected does occur.

Johanna Acevedo explains: "We set some pretty lofty quality goals around not causing our customers pain, thin-slicing changes to the least risk possible, and around mean time to restore. And those three initiatives really helped drive some of the decisions that the teams were making in terms of how they started to develop their software and how they started to deploy."

ActiveControl gave John Deere a practical way to move towards a new, more flexible SAP change management approach that has helped achieve these goals. Spreadsheet-based processes and large, infrequent production releases have been consigned to the past.

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Instead, automation has streamlined key tasks like transport sequencing, approvals, deployments, and document management. A significant amount of manual effort has been eliminated, laying the foundation for faster, more efficient delivery of high-quality SAP change.

The visibility provided by ActiveControl's Web UI also played an important role in process improvement, both from an operational perspective and in helping to develop a more agile mindset. "Visibility is one of the main improvements," says Adam Brunner. "One of my favorite things to do, as a coach, is to run the open transport report by project in ActiveControl then sit down with the product or engineering managers and say, 'Why does your team have more transports sitting in inventory than your sister team over here? What's going on?' And their mind just completely opens up. They start to think about what's preventing change, and the waste of motion, and it really starts to unfold from there."

Ultimately however, it was integration of ActiveControl with other tools that made delivery of granular SAP user stories a truly realistic prospect. An integrated pipeline has helped to streamline processes and further reduce administrative load on developers, so that a higher volume of 'thin-sliced' changes can be delivered without compromising on quality.

"I think people are more confident now, and why is that? Probably because they have a clearer picture of what's going on," notes Danielle Schmaltz, a SAP Basis Engineer. "In some landscapes they now feel confident in moving transports to Production every five minutes if necessary."

"The ActiveControl to John Deere Service Management system integration is a great example of our innovation & experimentation culture."

Conclusion

A fully integrated, automated process is underpinning John Deere's modern approach to change management in SAP. It supports wider adoption of their Agile Operating Model and Smart Industrial Strategy.

This innovative new solution - integrating ActiveControl, John Deere's SAP landscape and John Deere's Service Management System, and leveraging cloud technologies - has eliminated manual effort, significantly reduced risk, provided far greater visibility, and increased both speed and productivity. John Deere is now better positioned to standardize processes and tooling across enterprise applications, and operate with even greater agility.

Significant progress has already been made on John Deere's IT transformation journey - thanks to a collaborative culture, partnership mindset and strong leadership support - but there is much more to come. The John Deere team is looking forward to driving even more value from agile development, CI/CD pipelines and a DevOps mindset across their SAP technical stack as teams partner ever more closely, the use of automation matures, and agile techniques are further optimized.

Josh Edgin, Group Engineering Manager – Manufacturing Operations, sums things up: "Our agile transformation was driven by a need to deliver more value to our customers in faster cycles. Applying industry leading agile and DevOps practices to one of our largest, core product platforms in John Deere, SAP, was critical to our transformation success. The ActiveControl to John Deere Service Management system integration is a great example of our innovation & experimentation culture, demonstrating how a relentless focus on software engineering productivity ultimately improves how we serve and delight our customers!"

About SAP at John Deere

SAP software is a fundamental element in John Deere's technology stack, providing a backbone that powers many critical processes — from order management to manufacturing and beyond — across many different applications. Numerous production systems, with many thousands of active users and large volumes of customized code, support day-to-day operations on which the business depends.

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