



2018 BUSINESS TRANSFORMATION & EXCELLENCE ORGANIZATIONAL AWARDS

CATEGORY: Best Achievement of Operational Excellence in Technology & Communications

TITLE: “Drones and Virtual Reality: Providing a Higher Perspective on Continuous Improvement”

SYNOPSIS:

Arrow’s innovative Lean Sigma Drones project is an employee-driven initiative that has provided the global technology-solutions provider with actionable new insights into process-improvement efficiencies within its dispersed global warehouse operations.

Arrow drones capture high-definition video of warehouse processes from a birds-eye view, which employees review alongside an Arrow Lean Six Sigma (LSS) Black Belt. Utilizing Arrow’s proprietary rapid-improvement methodology and LSS techniques, the drone project has not only increased the utilization and understanding of lean practices among Arrow employees, but also it has increased productivity for targeted processes by 56 percent since the project launched in 2016, as well as reduced 6.8 million walking steps in warehouse operations annually, or the equivalent of 3,400 miles.

In 2017, Arrow’s Lean Sigma continuous process improvement leader Thomas Van Eimeren decided to take the successful drone project a step further by mounting 360-degree cameras to high vantage points within Arrow warehouses. The cameras securely capture and feed high-definition process footage to the cloud, so business operations leadership can access it from anywhere. The goal: provide the business operations team and senior leadership with a way to review and audit lengthier and more complex warehouse processes by simply donning a pair of virtual reality glasses and looking up, down and all around. In addition to significantly reducing travel costs and providing a greater return on working capital, the immersive experience aims to align all of Arrow’s warehouse operations to one global standard; with the new virtual reality tool, warehouse managers in Hong Kong can easily and quickly get an up-close and personal tour of Arrow’s Phoenix facility to identify inconsistencies, without ever having to leave their own facility.

STRATEGIC OBJECTIVES & SCOPE:

In early 2016, Arrow employee feedback pointed out that higher vantage points were beneficial for viewing warehouse processes and identifying areas for improvement. In fact, many warehouse managers were already using stairwells and raised platforms to gain a better vantage point into process improvements and efficiencies. The introduction of Arrow’s Lean Sigma flying drones provided them with even more effective vantage points.

Utilizing drones and a self-developed “Fly in Circle” process, Arrow employees around the world can now observe existing warehouse processes from the birds-eye view of a drone. “Fly in Circle” was derived from Arrow’s proprietary, rapid-improvement methodology “Stand in Circle,” in which employees are asked to stand back, “put their Lean six goggles on” and observe their work from a whole new perspective, capturing descriptions of waste they observe in real-time; with the drones, employees can see more than they ever could before.



The drone project was successfully piloted across several Arrow facilities in North America and Asia in 2016 and early 2017. While immensely successful, it had its limitations. For example, the drones could only notch around 20 minutes of flying time before needing to be recharged, so they couldn't monitor longer, more complex processes. The addition of the 360-degree cameras aims to provide additional tools for arrow's business operations team and on-site staff to identify ongoing process improvements and perform comprehensive audits, virtually.

This new evolution of the program is helping to automate and standardize Arrow's global warehouse operations even further—creating additional efficiencies that help save its customers and suppliers both time and money. In addition, Arrow's business operations team is exploring potential uses of the technology with the global sales team; if a supplier is trying to decide who to entrust their product stock to, being able to virtually “step inside” one of Arrow's secure, state-of-the-art facilities could be a great decision-making tool. The operations team is also exploring potential ways to utilize virtual reality in recruiting and job-training, offering prospective warehouse employees a first-hand look at their responsibilities before they ever set foot in an Arrow facility.

PROJECT IMPLEMENTATION & TIMELINE:

Arrow is currently piloting three virtual reality projects in its Phoenix, Arizona facility. Arrow's continuous improvement team, led by Van Eimeren, identified three strategic locations inside the warehouse to mount 360-degree cameras. The team is also currently in the process of directly observing the Phoenix facility operations to identify additional areas where 360-degree cameras could capture longer, more complex warehouses processes.

In Q1 of 2018, the team will evaluate outcomes of the pilot, make additional enhancements to the overall effectiveness of the project, and roll it out to additional global warehouse locations with drone programs already in place.

Five years out, Arrow anticipates that its drone and virtual reality projects will have significantly contributed to achieving the one global operating standard for all of its facilities that the company has been actively working towards.

SIZE OF PROJECT CHALLENGE:

Today, any of Arrow's 65+ logistics and operations sites in the world can request a drone demonstration on Arrow's Global Project Management Office internal website, and dozens of Arrow warehouses in North America and Asia—employing hundreds of Arrow employees—have their own drones, which they regularly utilize. In 2018, Arrow's European warehouse teams will receive drones, creating a truly global program. The expanded virtual reality program will scale similarly. However, given the virtual experience it provides, the expanded project will also have an impact on senior operations and supply chain leadership all over the world.

ORGANIZATIONAL IMPACT:



Drones and virtual reality have proven to be fun ways to engage employees at all levels in the process of continuous improvement, and they have reinvigorated excitement for Lean Sigma and the relentless pursuit of perfection throughout Arrow's global business and supply-chain operations.

The original drone project received 100 percent positive employee feedback, with accolades from both on-the-ground warehouse staff and senior leadership. Phoenix employees involved in the virtual reality pilot are excited to take the success they've found with their drones even further.

The biggest organizational impact to-date, and long-term, however, is aligning employees around the world to one global Arrow standard for how all facilities look and operate.

BUSINESS RESULTS:

The initial Lean Sigma Drones project has enhanced supply-chain efficiencies at Arrow in numerous ways since launching, including:

- A 56 percent increase in productivity for targeted processes
- The reduction of 6.8 million walking steps annually, or the equivalent of 3,400 miles
- 28 Arrow employees developed in Lean Sigma tools and concepts during the program's first six months
- A reinvigorated excitement for Lean Sigma and the relentless pursuit of perfection throughout Arrow's global business and supply-chain operations
- Made continuous improvement fun!

Anticipated metrics from the Arrow Virtual Reality Training pilot include:

- A \$250,000 expense reduction in 2018 from reduced travel-related corporate expenditures
- 5S standardization and calibration
- Reduction of 100,000 walking steps
- 18 percent productivity increase for targeted process
- Increased excitement for continuous improvement at all levels
- Accelerated improvement through global observation of processes and best-practice sharing

In March of 2017, Arrow's Lean Sigma Drones project was named "Innovation of the Year" at the Lean & Six Sigma World Conference, and in September of 2017 it won the "PCM 9th Biz IT Excellence Award" in Hong Kong; Arrow anticipates benefitting from additional accolades around its innovative use of virtual reality; Arrow operates one of the most complex technology supply chains in the world, and customers and suppliers continue to be attracted to Arrow's forward-looking approach to business operations.