Lean Success in an Administrative Environment

Customer demand is the heart of the office, supported by a one-team philosophy.

Mick Corrie

Does lean translate to administrative areas? Our experiences at Waukesha Bearings Ltd. put this question to the test, specifically within our sales and engineering office headquartered in Northwood Hills on the outskirts of London. The company is a subsidiary of Dover Diversified Corporation and Dover Corporation (NYSE: DOV), a specialist engineering company that designs and manufactures bearings. Our products are tailored to meet customer needs in a variety of rotating machinery applications for power generation, oil/gas, chemical, and industrial use. Our lean journey began in November 2001 when George Koenigsaecker (chairman of the Shingo Prize), visited our executive team to discuss the potential of a "lean conversion."

The UK operation had been recently acquired by Dover, so this inaugural welcome to "lean thinking" was also a chance to meet with new colleagues from all of the corporation's bearing manufacturing sites.

Each location sent representatives from human resources (HR), finance, production, engineering, sales, and operations to the event. We listened to the benefits of the whole enterprise "true conversion" to lean. As engineers, we accepted the relevance of lean for production yet questioned how could lean work in our engineering/administrative environment. In production, the formation of manufacturing cells and the development of takt time-driven standard work would obviously improve performance, but our non-manufacturing processes did not repeat and often the flow was different every time.

In sales and engineering, we signed up for a ten percent share of the 100 "rapid improvement events" to be run by Waukesha during 2002. We were soon to discover that lean would make a significant contribution across all areas, a dramatic transition from a traditional functional sales and engineering office.

Slow Out of the Blocks

As predicted, the value stream mapping (VSM) process undertaken by our manufacturing colleagues went fairly smoothly. The input and output of manufacturing steps was relatively easy to identify, the scope being from the launch of an order and initial material release, right

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In Brief

Initial success in Waukesha Bearings' administrative areas indicates that lean can be applied wherever there are customers and a process to serve them, according to author Mick Corrie. Centralized office workflow puts customer demand at the heart of the process.

through to eventual packaging and dispatch. The goal of the "future state" map was to combine all of these steps into a single manufacturing cell, so that product could flow unhindered by waste. We realized this future state over a year by making huge changes to the way we did things and the benefits as a company have been tremendous.

The culture in our sales/engineering office was a little different in that the case for change seemed less compelling. We already prided ourselves on our relationships with customers and our applications engineering expertise. We were skeptical, to say the least. "How could lean help improve the performance of our office?" we asked Simpler Consulting people (who were helping us with our lean conversion). "There are so many different processes that take place within account management; lean will simply not be able to help us." We were pressed to list these processes. The first step was to map the key processes. Our fear was that to VSM just one of these processes would negate the value of all the other processes we do. In hindsight, we just needed to map one process to see what waste we had (the initial map is shown in Figure 1).

The Three-Day Value Stream Mapping Events

Within our initial VSM event, we came to realize that many of the "different processes we do" were actually just pieces of a common value stream. We also found that a major reason for a lot of both perceived (and real) variation was that there was no "current best way" shared by the team. In fact, almost all of our process steps were dependent on the individual style of the person doing the work. We were assured that this is normal in modern offices where most people work alone with their computer in a cubicle, rarely sharing process knowledge or improvement ideas that lead to action.

Our first value stream map defined, with absolute simplicity, the process behind our very existence: "To win profitable business for the company." This is what we do
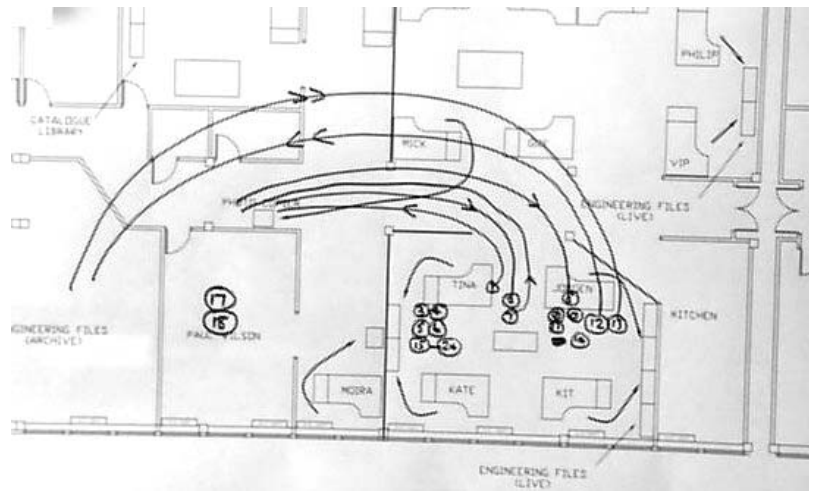

Figure 1. Distance traveled by a new inquiry (initial map).

to add value. By looking at each step in the process, we learned that if we have process steps that don't contribute to this value, then we should really question, "Why do we do them?" Put even more simplistically, why does any company want processes that waste resources, including people's time, that do not contribute to the overall health of the company? It is easy to say, looking back, that our initial doubts about how lean could apply to us were natural and typical when you do not really understand lean fundamentals or practical realities of a lean conversion. Translate that doubt to denial of the change itself. It is a hard question to ask of anyone: "So how do you add value?" Asking yourselves is harder still.

The process we initially mapped was "the inquiry process" because it touched most individuals in our office and is really the first contact a customer has with our organization. Inquiries range from simple needs, such as a straight repeat order, to highly complex, one-off engineered solutions. For the mapping, our first "lean event" involved a cross-functional team of six people including myself as the team leader and, interestingly, a colleague from our manufacturing division. The neutrality of this team member and the consultant helped to keep the mapping process flowing as sales and engineering team members discussed and mutually agreed what the inquiry process steps were. The "outsiders" were great, as they could ask all the basic

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questions like, "Why? How? What for?" We discovered truly amazing variability in our process steps. Another finding: Mapping cannot be done in a conference room. You have to actually go, see, and touch the work to understand how it is really done.

Within 48 hours, we had created the current state map, an ideal state map, and finally a future state map. This last map was a statement of intent of what we wanted our inquiry process to be like within six to 12 months. The mapping process is labor intensive, but it took the team to such a deeper level of understanding of what was actually happening and that the case for change was compelling. For instance, we previously sensed that our response time on proposals to customers could be improved but was basically good. It was only when actual calendar time and touch times (worked on time) were determined that it brought home to us how much waste we actually had (it was substantial). Recording (with reluctance) actual times with stopwatches was a real culture shock. Reality never matches your hunches or theoretical times.

From the VSM project, it was clear that inquiries for repeat parts should be fast-tracked with less engineering support. Not only would this reduce the number of steps on repeat inquiries, but also enable engineering to focus on the value-adding steps required of new-engineered inquiries. In effect, the fast flow required for "repeats" was being held back by the other inquiries. Any individual could prioritize, stop, or re-sequence any job as they chose, compounding this effect. When you add the phone calls and interruptions, which are a normal part of any office life, it was easy to see why things took so long. So two future state VSMs were created, corresponding to "repeat" and "new" inquiries.

Customer value, in terms of inquiry response time, was now quantifiable from the future state map targeting one hour for repeat inquiries and one day for new inquiries. Through mapping, we had identified "our" waste — catalyst for real change. Change agents who recognized the oppor-

tunities of banishing waste once and for all emerged from both our sales and engineering departments, expressing a desire to "give it a go." We looked forward to our first rapid improvement event.

Not Quite a Showcase

The lean movement went into overdrive with full backing from the top, especially at the manufacturing plants. We had to wait three months for our "sensei" (Chris Cooper of Simpler) to conduct our first rapid improvement event in the sales/engineering office. The unsightly current, future, and ideal state maps had remained on the walls all this time. After looking at these maps every day, we wanted to learn how to remove waste from our processes and we had identified the inquiry process as the main artery of the office, affecting sales and engineering personnel alike.

We set our first rapid improvement event to make a significant change in only five days. A new cross-functional team of six people (an account manager, three engineers, an estimator, and a customer service representative) was assembled, including two from the original team (creator of the value stream maps). The other four members had heard only an introductory presentation about lean concepts.

To ensure continuity of thinking and purpose, the team conducted a detailed analysis of the current inquiry process. We assessed each step of the existing process, noting the time it took, the distance traveled, whether the step added value (or not), and whether it could be done right first time. The results revealed a close correlation to the data from the current state map, but the added detail allowed the team to set further targets for reduction in process steps, distance traveled, and work in progress.

In spite of these clear targets, change is never obvious until it is discovered. The team found it difficult to imagine a future state that was significantly different from the current desk-based environment. Breakthroughs occurred when Chris led the team out of the conference room and encouraged us to "trystorm" in the open

office rather than "brainstorm." To reduce the effect of interruptions and reduce distance traveled between steps, we imagined a dedicated cell for the handling of inquiries.

A suitable location was identified, but again difficulties arose as time was taken up by the natural tendency to "brainstorm" and "intellectualize" our ideas. After a rapid series of "trystorming" activities in quick succession, the inquiry cell layout emerged. It was constructed four different ways before the team found a truly viable solution. The result, though, was a high-quality admin cell created in only five days. It could handle multiple customers/languages/currencies and products passing through it.

As we calculated the reduction in distance traveled by a repeat inquiry from 128 to 36 meters, an enduring lesson was learned: It is better to remove huge wasteful steps rather than slightly improve the value-added steps.

It is equally important to think way beyond today's traditional office layouts. If you think it through, most human-based processes add value when people collaborate, discuss, and make value-adding decisions. So why are 99 percent of the people in 99 percent of the offices in the world staring into computers in the corner of a cubicle? We learned to be wary of the "postponed perfection" that brainstorming often leads to when you literally talk your way out of doing anything. We learned to adopt a practical, step-by-step "try it then improve it" approach, which lifts morale as tangible improvements are made. Rather than just talk about things as we had done for years, we were changing things for the better.

The team gave a summary each evening to the rest of the office. This provided focus towards achieving things at the end of each day and we received good feedback and input.

As we ended the event, a whiteboard (one of many disused items located) was commandeered to enable everyone to give "safe" feedback without judgment beyond the event itself. The same whiteboard was also utilized to make visual the number of inquiries in/out each day, marking our first step towards performance measurement in an admin environment.

One Step Back

Within two weeks of creating the admin cell, the task of flowing inquiries through the cell had become intolerable to those using it. In our office different skills are mixed to handle a number of inquiries concurrently; the cell had, in fact, become an inhibitor to flow. We saw graphically that our customer demand was random; it seemed every time a new inquiry arrived, the cell was already occupied (picture the scene of people jostling for position to use the cell). This problem resulted in regular batching-and-queuing of work at the entrance to the cell. With time ticking on the response times for these inquiries, people quickly returned to personal desks to complete the work. Conversely, there would also be times when no one was using the cell. In our minds we had effectively created a cell, which was at times too small for the number of people required to operate it and at other times too big. We did learn that the perceived issue of "interruptions," which led to the creation of a stand-alone cell, was not as big a problem as we had thought.

Needless to say, our production board (whiteboard) was quickly packed with ideas and suggestions, and it was the richness of this feedback that directed our next rapid improvement event. The original intention was to conduct a 6S (sort out, straighten, scrub, standardize, sustain, and safety) event for the whole office, but the rate of issues arising from the cell outstripped our ability to resolve them. We felt we had reached a crossroads with lean. Feelings were mixed. The cell had had an adverse effect on our response times but mapping the inquiry process had been successful in identifying waste to banish.

On his return Chris Cooper smiled and asked us, "What has the cell revealed?" He encouraged us to think of improvements to build on what our cell had taught us. It was at this precise moment that top management (the ultimate sponsor) truly began to devolve responsibility for improvements

and placed trust in the decisions being taken at a local level. It would have been all too easy to identify another process to "lean" and report positive results upwards, but if the local team were to remain enthusiastic, we needed to find a solution to the difficulties we were experiencing. We received full backing to re-look at the cell, which to the unenlightened could look like a duplication of the earlier five-day event. This event week was to become a pivotal point for sustainable success.

Two Steps Forward

A second cross-functional team was formed for the event. From our previous teachings we recruited in two neutrals representing manufacturing and IT. It is now our tradition to actively change and mix team players so that everyone gets an equal opportunity to participate and we have the right skills available as needed. The numerous issues concerning the admin cell fell into many categories and provoked a variety of opinions. We were shown the cause and effect problem-solving tool which quickly lent itself to the separation of opinions from facts. Our understanding was strengthened by a series of interviews of all cell users. The main problem causes were soon identified and solutions sought.

Rather refreshingly, the admin cell was deemed not to be quite the failure we had believed it to be. It had actually been very successful in revealing underlying issues. Small islands of excellence, such as some impromptu sharing of engineering workload on new inquiries and visual performance measurement, had come to light through its execution. We did not want to lose these benefits.

The team decided that their plan of action for this event would be how to make the workload leveling process happen office-wide. We were assured that initial cells always reveal underlying issues to be solved, so the cell had indeed done its job. We had learned that although individuals had in-trays and phones, we needed to think of the whole office as having a collective in-tray that could, and should, be processed differently from the typical, ever-changing feast and famine of one person ultra-busy, the next person not.

So the team constructed a workflow control system in the middle of the office. A "visual" place was needed and real success would only come if it were easy to get in and operate. Intense "trystorming" ensued which now engrossed most of the office. Out went 11 partitions, four tables, two desks, and 17 boxes of paperwork, which could be archived. This freed up floor space so that printers and fax machines, which had been sitting in passageways, could be relocated to an ideal true point of use. (See Figure 2.)

This process of simplifying the physical office layout had a wide-reaching effect on everyone involved in the inquiry process. Personal desks were moved and separate filing systems, which had evolved in different quarters of the office, were co-located with a standardized method of file storage and retrieval agreed among all parties.

The most profound impact to the working environment was yet to come — climbing over the psychological hurdle of losing personal in-trays from one's desk to the new centralized office workflow system. This change was necessary to achieve a visual process for the entire office. The positive benefits of the cell were retained and re-integrated onto people's desks, whilst solving one of the main obstacles to fast flow (smoothing and leveling the load).

Concurrent One-Piece Flow

Whilst it may have been difficult in its execution, the centralized office workflow system has paid enormous dividends by placing customer demand at the heart of the process. It is analogous to a customer standing in the middle of an office pulling the whole team along.

Over the past several months since we have been operating our new lean system, average response time on inquiries (repeat and new combined) decreased from 5.6 days to 1.3 days. This improvement enabled us to work up the monthly number of inquiries received in to buck the current downturn in our markets and use freed-up time to do

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sales, stimulating follow-up calls that we previously didn't have the time to do.

We use one-piece flow so that no individual works on more than one inquiry at a time. For that reason, new inquiries are placed directly into the workflow system to minimize the disturbances to flow that were previously attributed to an open plan office. Actually the real disturbance was the natural tendency to "take a quick look at it to see what it is." Work no longer gathers on personal desks, eliminating the flow-destroying batch-and-queue. All "live" inquiries are transparent on the desks and the level of work in progress/incoming is visible for the whole office in the central workflow system. (See Figure 3.)

Are you wondering how you will know when to offer assistance if you can't see your neighbors' workload? Doing this with personal in-trays would mean walking around the office and asking (disturbing) — no longer needed with our new workflow system. We have proven to ourselves that agile customer service can be achieved when a team is prepared to share and level the workload. In essence, our sales/engineering has become a closer team which is self-managing and responsive to the rate of customer demand. The traditional "hot list" and crisis management that traditionally dominated the office is no longer employed.

A strange calmness has arrived. The leadership role has changed from direct management and trying to work out what the performance level was at any time to that of coaching and developing best practices with the team. If, for whatever reason, it is not possible to achieve a desired result, then we look at the process first. There have been examples where we found our new process steps were not explicit enough, prompting improvement of our standard work instructions which underpin our new lean methods.

Keeping the Habit

Our production board, which previously buckled under the weight of issues, was also moved to a central location. We quickly recognized that the new office

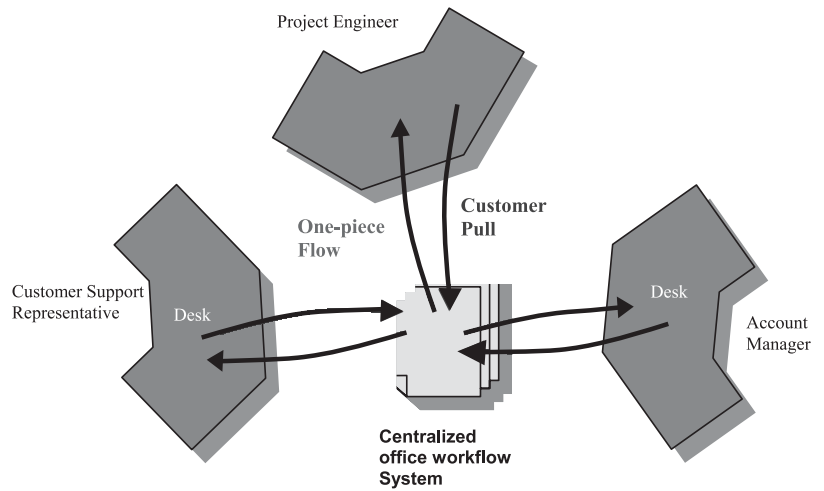**Figure 2.** Achieving line of sight visibility across the office.

Figure 3. Centralized office workload leveling with first in/first out flow system (FIFO).

workflow system would not be the "issues monster" that the dedicated admin cell had been. We were relieved that the *quality* of event result had been placed above number of events in our new approach; now we could look forward to new events.

As ideas appeared on the production board, we formed a multi-functional team representing both sales and production, meeting monthly to work out how best to address them. Minutes are issued with tasks assigned and deadlines set to ensure successful implementation. We avoid repeating ourselves by capturing all ideas in a "to do list" before the production board

Before Lean	After Lean
Batch-and-queue on desks Partitioning/cubicles	Visible work in progress across office Line of sight visibility
Uneven workloads	Level workload (shared)
Fire fighting	Calm
Group working	Team working
5.6 days to respond	1.3 days or less
Unknown performance	Performance and targets
'Hot-list' management	Self management

Figure 4. Comparison of "before" and "after" lean conversion.

is wiped clean for the next month.

There is no better motivator to idea stimulation and improvement than actually providing regular time for it. It was through this process that we targeted the need to improve our next key process: creating an order. Again, this is a process requiring a lean enterprise approach between sales and engineering to translate customer requirements efficiently.

Lean has taught us that, put bluntly, every day in admin is one day less to manufacture the goods. So with the benefit of our firmly-established workflow system and our experience in lean and teamwork growing, our next event ran smoothly. The workflow system was upgraded and modified to incorporate the order-taking process, enabling us to extend one-piece flow across two key processes. We have subsequently used lean tools to improve many aspects of our work, changing our culture.

Conclusion

It is important to think far beyond today's office layouts, methods, and approaches. Using external advice and building on our existing skills/experience, we learned to apply lean in non-traditional areas. Our commitment to lean conversion must be long-term for our success to be maintained. Having completed more than

100 lean events in 2002, we continued to extend lean process improvements during 2003 by realizing a similar number of dedicated lean events.

In our sales and engineering office, we have achieved a one-team philosophy, encouraging knowledge-sharing and development within an open climate. Improvement ideas continue to be added to our production board, underlining the fact that the removal of waste never ends. To banish waste, the process needs to be visible to everyone. Lean has had a dramatic and positive impact on our ability to provide customers with a competitive service.

Since the implementation of our lean inquiry/order workload system, we have underpinned our lean conversion with an office-wide 6S event, scoring 96 percent in our audit. In turn, we created "free" floor space, decreasing our original footprint by 50 percent. We will revisit our future state map annually as we set more ambitious targets and we will continue to place customers as the primary pull for all of our processes. We feel we are only at the beginning of our journey of possibilities with lean: improving yield, minimizing backflows, avoiding rework, sharing best practices (internally and externally), developing lean enterprise thinking in collaboration with suppliers and customers. Our initial success proves that lean can be applied wherever there are customers and a process to serve them.

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