

THE PIVOT PALETTE

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CONSULTING & TRAINING

Lean Enterprise

Setup Reduction & Mistake Proofing

Six Sigma - Black Belt, Green Belt

ISO 9000, TL 9000, ISO 16949, AS 9100 . . .

Change Management

Contract Management

Business Continuity Planning

Facilities Management

Process Improvement

Process Excellence / Baldrige Award

Project Management

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RADICAL THINKING?

FIX THE CAUSES!

For all the years we have been talking about productivity improvement and customer satisfaction, it is amazing how many organizations still rely upon budgeting and financial results, and fail to understand the concept of process measures.

One of our clients was having difficulties with its customers. The client wanted to improve customer satisfaction and their service delivery process. We started by interviewing our client's customers and employees, and discovered that the customers were generally pleased with the quality of the product and often the service they received. Costs were generally the area of discontent, coupled with "projects take too long". We also gleaned that employees were dedicated to the organization and took pride in their work. They believed that they provided lower costs than external suppliers (they were a dedicated, self-supported internal supplier, with no-profit motive). However, neither side was able to provide data that supported either of these arguments. Were they too expensive or were they the least expensive? Being a dedicated internal supplier, there had been no comparison to outside suppliers in terms of costs or schedules. The only measures I

was able to find were financial reports showing budgets vs. actual costs, expected vs. actual completion dates, dates and dollar amount of change orders. It was as though they were all clinging to the rear-view mirror and trying to drive forward by watching the yellow center line in the highway behind them – then blaming someone when accidents occurred. That does not work. It never has. It never will.

There were just too many variables in the business to budget with any accuracy: changing scopes, technology and raw material prices, and personalities in different geographic areas. I was unable to get any process measures or input measures. In fact, there was even a lack of understanding of these concepts.

I used baking and selling of cakes as an analogy to explain the concept. At the end of the day, we could measure how much the cakes sold for, or whether the cake itself was tasty and soft. We could compare that against expectations. However, unless we measure the amount and quality of ingredients used, the process of mixing, the oven temperature, application of heat from above, side or below, etc. we will not be able to control the outcome consistently. We

get desired results only by managing the process. Managing the process is to control the process. To control the process is to be able to forecast a result from a cause. If we do not get expected results, we review the process data for noise and signals. We then determine and fix the causes that provoked the signals. That is how we improve the process to get consistent results.

Quite often, we try to stem the noise (the distractions, the normal variation) and wonder why we run around like decapitated chickens, and do not see any improvements.

We need data on which to base our findings before we can make improvements. While financial data is important in running a business, that end data often comes too late to control an outcome. Did the machine stop by itself? Why? Did the operator stop the machine? Why? Are there too many scope changes? Why? Are there too many design changes? Why? Is it concentrated in one geographic area? Why? Are customers dissatisfied? Why?



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A quarterly publication of PIVOT Management Consultants



Quarter 2 2006

MISSION

Be a premier provider of management consulting services to industry in the high technology, manufacturing / design, services, healthcare, education and government fields.

Be the best partner a business leader can have to help accelerate the move along the path of continuous quality improvement and quality system enhancement, rethinking and changing the way our client's business is done internally and for the marketplace and industry our client serves.

Implement operational improvements across all functions and levels of our client's organization to achieve improved strategic and marketplace position, delivering value added measurable results.

Provide a positive, rewarding, collaborative work environment within PIVOT that fosters personal growth, fulfillment and success for our employees.

improvement? Apply the logic. Collect data. Focus on measures and trends. Ask "why" for all significant anomalies. Fix the cause.

CASE STUDY

Line Reconfiguration

The plant is a manufacturer of specialized high voltage connectors and subassemblies for defense, aerospace and industrial applications. The work is mostly manual and uses skilled personnel, often trained at the plant itself.

The plant has been organized in functional areas grouping similar equipment. New equipment purchases were often placed in available space, not often conducive to material flow. Product traveled over lengthy flow paths. Batch production coupled with disconnected operations resulted in large queues and extensive rework in process inventory. There was usually a significant backlog of work with the usual delays in product delivery.

About a year ago, the organization embraced Lean manufacturing and decided to train every employee, across the board (from manufacturing, engineering and sales and administration) in basic lean concepts. Fortunately, PIVOT had an added requirement that each employee, working in a cross-functional team, complete a project, however small, in order to get a better understanding of the concepts learned.

One such rather complex project was to look at rearranging one product line as a cell for improved flow. The team was led by Sr. Manufacturing Engineer with team members consisting of operators, design engineers and maintenance.

The team completed the cell configuration over a period of four months. The project started with mapping the 'as-is' flow of the various components as they passed through the plant to final assembly and testing and noting the waste in the process - the extensive travel, waiting, inventory, inspections. Other major phases of the project included 1) designing the 'to-be' flow, 2) identifying the area for creating the cell, 3) designing the various workstations,

4) configuring and reconfiguring the layout, 5) building the cell, 6) populating the area with furniture and equipment, installing static dissipating and epoxy flooring, air lines, running electrical services, 7) assigning and training the right people, and finally, 8) making minor adjustments to fine-tune the process. Most of the moves were handled by the plant and maintenance staff.

Using tools learned during the Lean training, the team evaluated alternative straight-line and U-shaped layout alternatives using weighted criteria analysis and decided on a U-shaped flow and started implementation. They incorporated some new processes, including in-line testing.

While the cell is still evolving, results achieved include:

- Able to maintain production with minimal downtime
- Beginning to balance the line to takt time and improve quality
- Incorporating kaizen improvements such as 5S and line-side optimization
- Built in flexibility for future addition of other part families
- Product flow distance reduced from 440 feet to 100 feet
- Achieved a 28% improvement in productivity in the product line
- Inventory reduced from 38 days supply to 27 days
- Quality improved with implementation of in-line testing; less rework and improved feedback
- Product backlog eliminated
- Set the stage for continuous improvement with teamwork and lean manufacturing follow-through
- Set the stage for additional similar projects

While the cell is still in its early stages of operation, the plant is well positioned for effective operations with streamlined product material flow and the application of lean concepts to other non-manufacturing areas.

LEAN IN HEALTH CARE

LEAN AT VIRGINIA MASON MEDICAL CENTER

Virginia Mason Medical Center in Seattle, Washington, has been using lean management principles since 2002. By working to eliminate waste, Virginia Mason created more capacity in existing programs and practices so that planned expansions were scrapped, saving significant capital expenses: \$1 million for an additional hyperbaric chamber that was no longer needed; \$1 to \$3 million for endoscopy suites that no longer needed to be relocated; \$6 million for new surgery suites that were no longer necessary.

| Category | 2004 Results (after 2 years of "lean") | Metric | Change from 2002 |
|------------------|--|---------|--|
| Inventory | \$1,350,000 | Dollars | Down 53% |
| Productivity | 158 | FTEs | 36% redeployed to other open positions |
| Floor Space | 22,324 | Sq. Ft. | Down 41% |
| Lead Time | 23,082 | Hours | Down 65% |
| People Distance | Traveled 267,793 | Feet | Down 44% |
| Product Distance | Traveled 272,262 | Feet | Down 72% |
| Setup Time | 7,744 | Hours | Down 82% |

Source: Virginia Mason Medical Center

LEAN AT A LAB

Here is what the Director of this Southern California Lab had to say to us, "A lab's goal is to process specimens and provide results quickly, so we started with overview training at the management level, then applied some basic building blocks of lean:

- * The first step was workplace organization to create order — cleaning and organizing supplies and the workspace.
- * Then we looked at layout. We redesigned the central processing area where specimens first come into the lab. The redesign allowed the client to fit more workstations into the same space, so all technicians

could finally have their own workstation, eliminating a lot of waiting time. At the same time, we improved efficiency of work flow.

Next we will look at implementing standardized work. This stems from understanding the sequence of the operations, including how long the work should take. It should remove the 'it depends' factor.

- * Another basic tool used was value stream mapping. Define the current state — the way it's done now. Then as we were getting ready to move to larger facilities, we looked at where we wanted to be as to flow and turn time and identified areas for improvement.

LEAN IN THE EMERGENCY DEPARTMENT

The Lean project in the 400-bed Avera McKennan Hospital's ED, (Sioux Falls, SD) which is a certified trauma center, aims to reduce the current two-hour, 12-minute lead time from patient check-in to release or admittance to 1.5 hours—and ultimately to one hour. To facilitate patient flow, ED patients go directly to triage which generates an account number and patient identification band. A complete registration is done at bedside after care has begun. Their goal is to have the patient seen by a physician within 20 minutes of arrival. Additionally, rather than having dedicated rooms to provide certain types of care, the ED is standardizing all of its rooms, which frees up room availability. The ED staff brings standardized carts to the rooms for specific patient problems, such as a suture cart, a gynecology cart, or cast cart.

KAIZEN OFFERING

Want to experience benefits from Kaizen? Host an event.

[We may be able to arrange funding for this training](#) for California based organizations.

Upcoming Public Courses:
(customized for on-site offerings)

Call us about offerings in Spanish.

| | |
|--|-------------------------|
| Six Sigma Executive Overview | 6 hours |
| Lean / Six Sigma Champion | 24-40 hours |
| Six Sigma for the Workforce | 40 hours |
| Six Sigma Green Belt - one day a week (80 hours) | Certification available |
| Six Sigma Black Belt - one day a week (160 hours) | Certification available |
| Lean Manufacturing - Basic & Advanced available | 40 hours each |
| Mistake Proofing | 24 hours |
| Setup Reduction | 32 hours |
| Business Process Mapping / Responsibility Charting | 16 hours |
| Problem Solving Tools (Basic) | 16 hours |
| Time Management | 16 hours |
| TRIZ (in San Diego,) | 16 hours |
| Project Management | 40 hours |
| Business Continuity Planning | 8-40 hours |

If you have any comments/suggestions, please contact:
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IDEA GENERATING TECHNIQUES

Really good ideas come out of inspiration, perspiration, and techniques. Here are a number of 'creativity' techniques that can help individuals and groups generate better ideas.

Attribute Listing: We first list the major attributes of an existing product, service or process that we are examining and then modify each attribute as we search for improved products or processes. Attributes are parts, properties, qualities or design elements of the thing we are looking at. For example, attributes of a pencil would be the shaft material, lead material, hardness of lead, width of lead, quality, color, weight, price, etc. A manufacturing process would consider the number of parts, types of processes, layout, expertise, etc. A TV plot would have attributes of characters, actions, location and weather, etc. Improving the quality of a screwdriver may look at shank shape, handle material, manual vs. electric operation, and torque provided by the twisting action. Once the attributes are selected, the team would propose attribute modification to improve the product, service or process. We could draw up a table using these attributes as column headings. We could then write down as many variations to the attribute as possible within these columns. Ideas can be stimulated by putting the following questions : put to other uses? adapt? magnify? minify? substitute? rearrange? reverse? combine? remove?

Forced Relationships: Here several objects or tasks are listed, and each is considered in relation to every other object or task. Lets say we are redesigning a desk for executives. We list several objects that could be related to OR on a desk: clock, computer, book case, etc. We may come with an electronic desk. We could be looking at the change order process and list several tasks: need identification, design change, review, approval, release, incorporate, etc. Forcing us to examining the relationships and combining or eliminating tasks may result in a process that has a reduced number of handoffs and shorter cycle time.

Brainstorming: This is the act of defining a problem or idea and coming up with anything related to the topic - no matter how remote a suggestion may sound. It is particularly useful when we need to break out of stale, established patterns of thinking, so that we can develop new ways of looking at things - whether we need to develop new opportunities, provide better service or improve existing processes. Brainstorming, a technique developed by Alex Osborne, is a lateral thinking process. It asks that people come up with ideas and thoughts that seem at first to be a bit shocking or crazy. Building upon them, we can then change them or improve

them into useful ideas, which are often original and outside the traditional 'box'. It is not a good idea to include too many experts in the group, because they tend to be very rigid in the way they look at problems. In order to be effective, brainstorming sessions need to be focused with a clearly defined problem statement. No criticism of ideas is allowed and we do not discuss or evaluate the ideas during the brainstorming session. Quantity is encouraged, freewheeling is welcomed. Building on other's ideas is fun.

Reversal: An interesting approach for improving a product or service, we begin by asking the opposite of the question we want to ask, and apply the results. Lets say we want to improve the response of a service center. Using reversal we would ask, "How would we reduce customer satisfaction? We might then come up with the following answers: 1) Not answering the phone when customers call, 2) Not returning phone calls, 3) Have people with no product knowledge answering the phone, 4) Use rude staff, 5) Give wrong advice, etc. After using reversal, we would ensure that appropriate staff members were handling incoming calls efficiently and pleasantly. We would set up training programs to ensure that they were giving accurate and effective advise.

SCAMPER: A simple tool for creating new products and services, it provides a checklist that helps us think of changes we can make to an existing product or service to create a new one. These can then be direct suggestions or starting points for lateral thinking. Developed by Bob Eberle, SCAMPER stands for Substitute, Combine, Adapt, Modify, Put (to another use), Eliminate, and Reverse. This is a list of changes we could make to existing products and services to open up new opportunities or create new solutions.

Reframing Matrix: Another simple technique that helps us look at business problems from a number of different viewpoints. The approach relies on the fact that different people with different experience approach problems in different ways. The techniques allows us to put ourselves in the minds of different people and imagine the solutions they could come up with. Even here we could have two approaches: the 4P approach where we look at the problem from 4 viewpoints: 1) product perspective, 2) planning perspective, 3) potential perspective, and 4) people perspective. The second approach is somewhat different in that we look at the problem from the viewpoint of different professionals (doctor, engineer, accountant, sales manager, etc.).

By using different techniques, we are able to overcome the impasse that sometime plaques idea generation sessions. Call us if you would like to learn more about these techniques.