Developing World Class Manufacturing Agility: How to Reduce Total Cycle Times In Your Company

Use Time-based Competition as one of your most powerful strategic weapons! Drive down the time it takes to develop and deliver new products, dramatically reduce inventory and manufacturing time. Slash the cost of quality, and win back market share. This article tells you how top-flight companies are doing it.

Taking dramatic steps to become agile is necessary to be a manufacturing or distribution contender in the next decade. Organizations must focus on moving information and products quickly through the entire supply chain, distribution, assembly, manufacture, and supply. All physical events must be enacted swiftly, accurately, and effectively. The faster that parts, information and decisions flow through an organization, the faster it can respond to customer needs and orders.

Substantial market share has been lost over years to foreign competitors. No industry is immune. The pressure is on to be the nothing less than the best. Reducing cycle times in your company is a new way of tackling the problem. It's a new world-class manufacturing strategy that is making companies fiercely competitive. Companies who are doing it are cutting out 50 percent of the time to develop and introduce new products. Some have already reduced factory throughput time by 98 percent.

Time based competition is one of the most powerful strategic weapons to emerge in the last 20 years! It allows you to drive down the time it takes to develop and deliver new products, dramatically reduce inventory and manufacturing time, slash the cost of quality, and win back market share. Today, and for the next 10 years, speed kills the competition. Time compression can result in consistently producing happy customers: a great formula for success. Why? When given a situation where costs and quality are similar, customers will choose delivery as the deciding factor.

Compressing time has a cascading affect on quality and cost. As cycle times are reduced, productivity increases proportionally. A fifty percent reduction in cycle time and a doubling in work-in-process inventory turns causes productivity to increase from 20-70 percent. As productivity increases, resource capacity is freed. Two things happen: costs decline, and the organization becomes capable of producing significantly more output with less resources: a winning combination

Most manufacturing companies spend anywhere from 5-10 percent total time actually adding value to the product, i.e., transforming the part or moving it closer to the customer. The rest of the time is waste, resulting in higher costs occurring with loss of time.

Inducing velocity throughout a business has a profound effect on time and cost. The need for nonvalue-adding functions disappears, and the functions designed to accommodate exceptional circumstances fall out. The organization chart becomes flatter. Following this is a dramatic reduction of overhead.

How to Reduce Total Cycle Time

Understanding the way an organization functions is key to the redesign for time-based competition. The structure dictates how labor is divided and how power is allocated. Physical proximity normally follows structure, both of which have a direct impact on ease of information sharing and time.

In a traditional functional organization, communication walls begin to build as the organization grows. Over time, functional entities develop and become self-serving, losing sight of the mission: ***serving the customer.***

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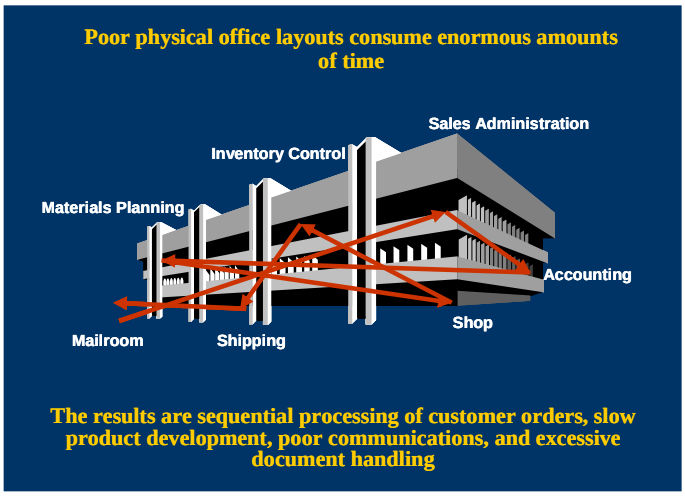
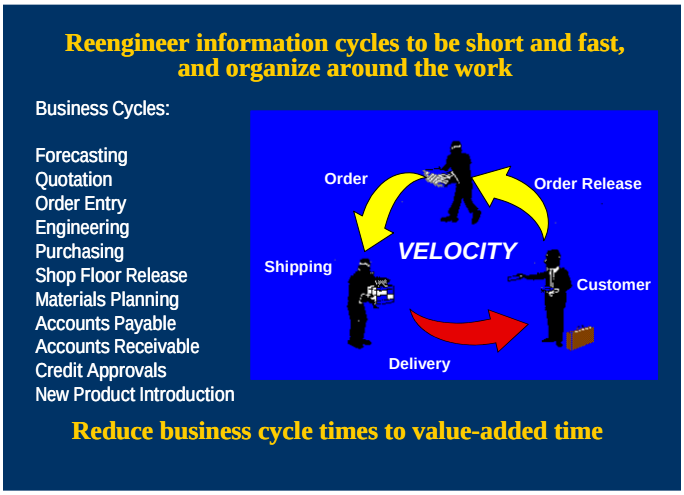
Sequential decision-making becomes prevalent, coupled with poor or non-existent communications. The organization develops functional empires, fraught with politics and narrow points of view. The result is an organization slow in decision-making, heavy with vertical layers of management, bureaucratic in nature, low in productivity, and generally ineffective.



Every business has basic cycles (processes) that govern the way that paper is processed, product is manufactured, and decisions are made. They may be documented in the form of procedures or routings. Examples of business cycles are customer order, product development, production, and procurement.

A customer order cycle begins with the placement of an order by a customer. It ends when you are finally paid for goods or services rendered. But there are activities in between the two events that consume time. Some add value, such as packing and shipping, and some are non-value adding and delay time, such as moving the order around the building from mailbox to mailbox, sitting on a desk, or repetitive motions.

When a cycle ends, a lot of non-value adding time has been consumed that may constitute 90-95 percent of total time. Some of the time is lost in travel, some is lost in the processing backlog, and some may be lost diverting a customer's order to a credit department for release. If you can identify the non-value added time in the cycle, you can devise ways to eliminate the causes.



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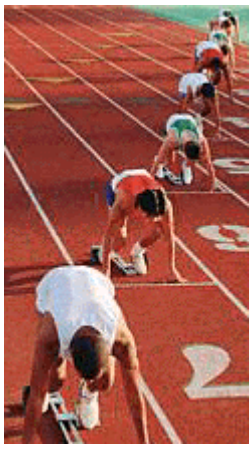


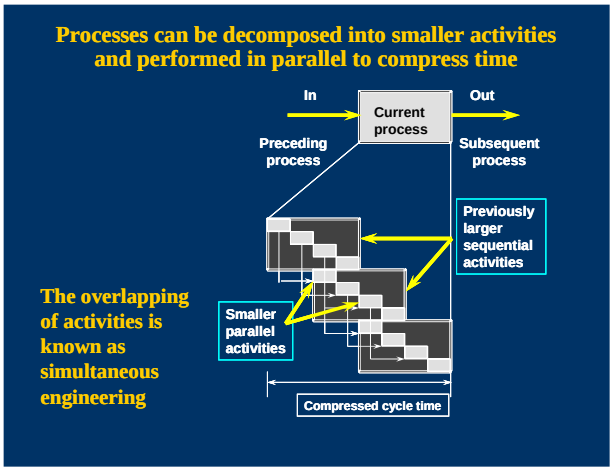
Why is this important? Competing is taking on tough, new proportions. A global resegmentation of markets is emerging that is changing the world economy. U.S. manufacturers face stiff offshore competition in most markets. Companies failing to respond to the challenge will find themselves left behind eating someone else's dust.

Long sequential strings of cycles make up the mainstream order flow and contribute to long throughput times. Poor physical logistics worsen the time delays; i.e. when distribution is physically separated from the main assembly plant, or engineering is separated from sales, etc. Component plants located overseas add even more to the overall throughput time of the service chain of events.

Mainstream value-add activities are identified on flow process charts. Flow process charts are analyzed for activities that delay mainstream activities. Delays can be moves, slow operations, inspections, as well as waiting time. Cutting cycle times fifty percent per established period of time is a good goal. The process is continuous.

It is not uncommon for the manufacturing time to only consume 40 percent of the total time a customer has to wait. Yet the value-add time in the plant is generally 5-8 percent of the manufacturing throughput time. The way to identify the activities is to use process mapping.

Mapping process flow is a fundamental step in reducing total cycle times. Mapping the flow and tracking time for each of the events provides a basis for analysis. The process is not difficult, however it is time consuming. It provides a step by step image of work flow, systems, procedures, and volumes. It reveals the relationships between the tasks.



A process is any series or combination of tasks or activities which produce a result. The result could be a machined part, a drawing, or a requisition for materials. Cycles are sequences of recurring successions of processes or events. The cycle time is the time from the beginning of the first step of the process until the beginning of the first step of the next process. Processes can be decomposed into smaller activities. Traditionally those activities may be performed in a sequential manner. In this situation each step is completed before the next one begins.

Once cycles are mapped, the opportunities to compress time can be pursued. The goal in compressing time is not to devise the best way to perform a task, but rather to either eliminate the task altogether or perform it parallel with other tasks so that the overall system response time is reduced. A basic premise of reducing total cycle times is to separate activities between in-line and off-line.

Extending this approach to the entire supply chain and focusing in on the mainstream activities that add value is key. Each of the steps can be further decomposed into smaller activities. By providing the output, such as transferring information, from smaller activities much sooner to the subsequent smaller activities, time can be compressed.

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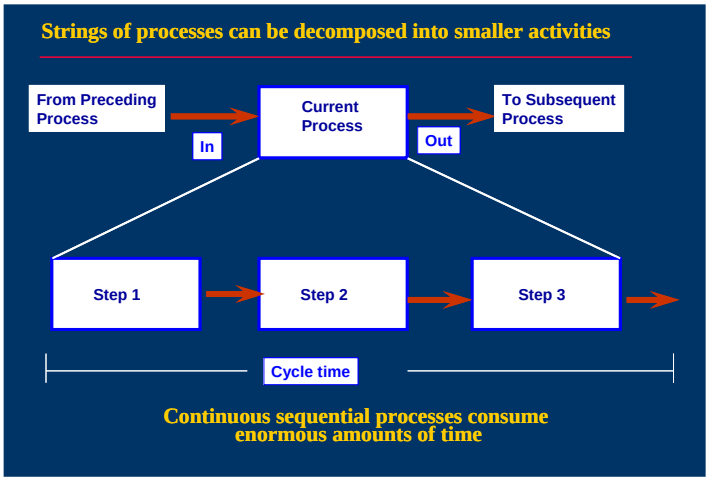
World-class performance requires speed, quality, agility, and endurance. In a highly competitive race for world market domination, there are no silver or bronze medals. You win or you lose. This degree of performance doesn't simply happen. It requires years of commitment, conditioning, and a vision of a gold medal.

No sacred cows exist. Functions, tasks, jobs, and parts of organizations that stand in the way of value-add are removed from the mainstream to off-line positions. Off-line functions and positions perform preparatory work for in-line activities. Examples of off-line work are pre-engineering, pricing, credit-checks, and purchasing negotiations for just-in-time supplier contracts. Credit and accounting are not allowed to delay orders.



Summary

Time-based competition is a powerful strategic weapon to counter stiff foreign and domestic competition. Reducing cycle times throughout your company can makes you fast, flexible and a fierce competitor. Its implementation requires an attack on the basic company infrastructure. Focusing on streamlining physical flow of parts and information and compressing time in the basic business cycles can make it happen.

It gives you the capability to get ideas off the drawing board and into the market place faster. It enables you to move parts through your plants with turbo velocity. It gives you the means of becoming world class, and provides a new approach to competing globally in the next century.

Author

Richard G. Ligus is President of Rockford Consulting Group, Ltd., located in Rockford, IL., with over 30 years experience in manufacturing, procurement, transportation and distribution. He specializes in developing and implementing manufacturing, distribution, and supply chain strategies. Rich is an author and a speaker, and has developed seminars with the American Management Association. He is certified by both the Institute of Management Consultants and the National Bureau of Certified Consultants.

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Rich has a bachelor of science degree in mechanical engineering from the New Jersey Institute of Technology, and a master of business administration degree from Rutgers University. He is a member of CASA/SME, and has been listed in Jane's Who's Who in Aviation and Aerospace. He has been a speaker at IMTS, USCTI, APFA, NEPMA, MCAA, Hand Tools Institute, CASA/SME, and others. He has appeared several times on WREX-TV, Mid-Morning Magazine.

About Us

Rockford Consulting Group is located in Rockford, IL, a city with a substantial manufacturing and machine tool history. An Illinois corporation, our company specializes in supply chain management, focusing in manufacturing and distribution operations management consulting. As companies search for ways to react to intense competitive pressures, we offer a unique group of integrated, dynamic state-of-the-art services to help clients develop world-class performance capability.

We facilitate the development and execution of supply chain, manufacturing, procurement, logistics, information systems, distribution, and organizational strategies that reduce delivery time, reduce cycle times, reduce costs, streamline information flow, streamline the organization structure, reduce manufacturing time, quicken the decision making process, and build a cohesive management team.

Rockford Consulting Group has a cadre of the best consultants in the world today, providing high quality professionalism through the use of experience and innovation. We subscribe to the Institute of Management Consultants Code of Professional Conduct. We provide high-quality professional consulting services that span both technical and cultural issues. Our clients are treated as our highest priority. Everything that we do is client driven and for the client's ultimate benefit

Through our affiliate offices, we serve North America, Central America, South America, Middle East, Southern Africa, and China, with over 1000 specialists worldwide.

Consulting Services

These are the various services and applications we offer, as part of our Supply Chain Management consulting portfolio, for agile manufacturing efforts:

- Adaptive & Flexible Applications
- Cycle-time Reductions
- Inventory Reductions
- Throughput Time Reductions
- Order-to-Ship Lead Time Reductions
- Operating Cost Reductions
- Fixed Overhead Cost Reductions
- Variable Overhead Cost Reductions
- Substantial Increases in Capacity/ Throughput
- Physical Flow Improvements
- Increases in Revenue Generating Floor Space
- Agile Manufacturing Applications
- Synchronous Manufacturing Applications
- Make-to-Order Applications
- Mass Customization Applications
- Flexible Cell Design
- Factory Design/Simulations
- Supply Chain Modeling/Simulations
- Operational Audits
- Machine/Equipment Analysis/Specifications

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- Capacity Planning/Simulation
- Materials Logistics Analysis/Simulation
- Inventory Planning
- Material Handling Design/Simulation
- Core Process Identification/Development
- Global Sourcing
- Team Building
- Outsource/Reengineer Assessments
- Supplier Partnership Negotiations
- Cellular Organization Design
- Kaizen Blitzes
- Cell Development/Implementation
- Information Technology Evaluations
- Visual Scheduling Development
- Concurrent Engineering
- Materials Management
- Acquisition Analysis & Due Diligence
- Project Management
- Manufacturing Strategy Development
- Cost/Benefits
- Work Center Design
- Assembly Evaluation/Design
- Production Planning
- ERP Evaluation/Selection/Implementation
- Plant Evaluations
- Plant Consolidation
- Inventory Planning
- Agile Business Process Reengineering
- Information Technology Evaluations
- Scheduling Development
- Concurrent Engineering
- MRP Evaluation
- Work cell Design
- Logistics Analysis/Simulation
- Kan-ban/Visual Scheduling
- Cellular Operator Classification Design
- Synchronous Scheduling Development
- Synchronous Line Pacing
- Operational Assessments
- Cellular Operations Development
- Materials Management
- Project Management

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