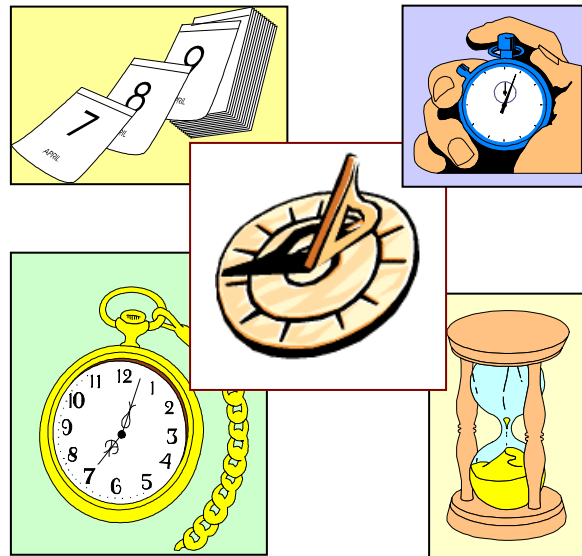




It's all in the way we listen.



It's All About Time

A non-technical explanation of what it will take to successfully participate in the Supply Chain of the 21st century.

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Second Edition

**There is never enough time to do it right the first time,
but always enough time to do it right
the second time ... the third time ... the fourth time ...**

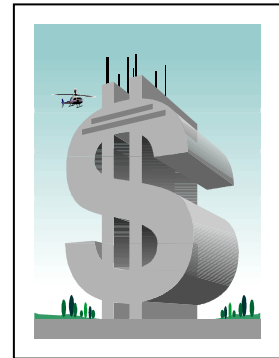
Chapter One: Business Technology

There are two trends in the 1990s that are leaving their mark on businesses in the new millennium – downsizing and the Internet. Unless you have been living under a rock, you have probably been affected by at least one, if not both. As an employer, you are looking at downsizing and the Internet as a way to save your business. As an employee, you have polished up your résumé and have it ready to distribute over the Internet at a moment's notice. You may not know it or admit it, but somewhere, both trends, in some form, have become part of your way of life.

The problem is that we have gone about it the wrong way. We downsize and remove people from our processes without changing those processes or adding new replacement processes. We just made it harder on those who were left behind. We embrace the Internet without changing the way we do business. We only used it to freshen-up our image at the front door. In other words, we took what we thought were shortcuts to profitability, only to discover, the hard way, that shortcuts are the longest distance between two points. The reward for our efforts has been short-term profitability at best. Nothing that mattered has or was changed. We didn't get to the core of the problem. We did not deal with the business itself.

When we talk to groups or businesses we ask the following questions to determine where and to what extent new technologies have been deployed. Let me ask you the same questions. (Please respond by raising your hand.)

- Do you have a website and/or use eCommerce as part of your business?
- Do you do use enterprise applications (ERP) to manage your business?
- Are you using Electronic Data Interchange (EDI) to do business with your customers?
- Do you utilize barcoding and other forms of data capture?
- Do you connect your organization internally with workflow?
- Do you mine your data to gather business intelligence?
- Have you had successful implementations of the above?
- Have you made (saved) any money?



Almost to a person, all will raise their hands for one or more of the first seven questions. The hands all come down for the last question.

Eventually we all learn that technology alone, as wonderful as it is, is not the answer. There has to be a business reason for the technology that results in an improvement to the business itself. The technology has to address some underlying core issue or problem. If you are using technology just to keep your customers happy, or if you are doing so just because it seems to be the right thing to do, then you are probably spending more than you are getting back. And you are not alone -- very few hands (other than those from companies such as Wal-Mart, Sears, and Ford) are raised for question eight.

Nevertheless, it is only a matter of time before we (and our competition) 'catch on'. We first discover that all technology is not the same, that there is information technology *and* business technology. Then we start using each technology for the right reason -- to fundamentally change the way we do our business.

It's All About Time

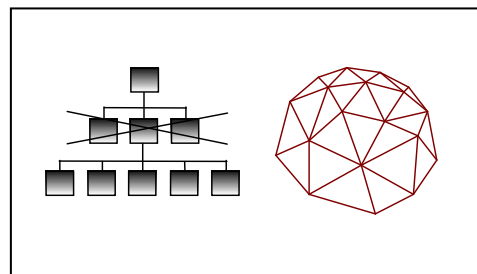
'Catching on' comes quickest to those who learn the underlying concepts that drive the business processes. *Time* is one of those concepts. Time may be the most important concept. Understand time and you understand what it takes to run a business, what makes a business tick. Control time and you are in control of your business. Let time control you and you are out of control. Either way, it's all about time.

The concept of time that you are interested in is the one needed to improve your business. It is *not* about time management -- that is when humans want to make better use of their time. The time you want is the one used as a driver of the business process, as a key part of the business technology. It is about *where* to apply time and *how* to use time to keep pace with the pack, or maybe even get out in front. It is about using time to make your business successful.

Start off by thinking of time as more of a thought process than a how-to guide for the ultimate solution. Take time to plant ideas and stimulate thought about how to improve your business-- to give you a leg up, a head start finding the easiest and fastest way to begin changing your business. Use it as a guide to where to look and not what to do when you get there. Let time 'teach you how to fish', not 'do the fishing' for you.

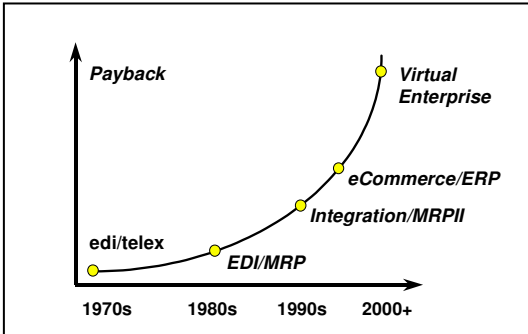
As you think about time, please consider the following:

- In the new century, a company's success will be measured by its culture, its business style, and its business processes -- not the specific products it makes or services it provides. Those who are the most successful will be those who are the quickest to respond to the whims of the customer and the shifts in global demand. The survivors will be *fast* on their feet, *flexible* in organization and infrastructure, *open-minded* as they employ *open* systems, and have an *empowered* work force. To achieve this state, companies large and small will require business information that is *accurate*, *timely*, *accessible*, and with a minimized need for *human* intervention. The business systems that use this information will be *agile systems* that are *configurable*, *interoperable*, *collaborative*, and *distributed*.
- Some corporations are already leveraging collaboration and the Internet into significant reductions in operating costs. For them, this dynamic duo has become a necessity -- a way of doing business -- the price of admission for success.
- The next step will be to 'merge' the business systems themselves -- to have them interoperate. The focus will shift to the middleware and the movement of information, rather than the applications on either end. The action will be on the 'back end' hanging it all together. Collaborative technology and the Internet will also become part of that process.
- The next decade will bring about significant organizational change. It will accelerate the spread of global commerce to all businesses as it lowers the costs and removes the barriers. With help from the Internet, the rigidly structured organization of today will be replaced by one that is much more amorphous -- a geodesic dome-like structure with centers of competency interconnected to centers of information over an infrastructure based on business technology.



Where are we going? To the Virtual Corporation!

One last thought. Before we get started down the yellow brick road of business technology it might be a good idea to take a quick look at where we have been and where we think we are going. As you can see from the graphic to the left, electronic business technology has been with us since the



early 1970s. First there were homegrown and proprietary systems followed by the first commercially available systems to cover basic EDI and Material Resource Planning (MRP) software. During the 1980s we learned how to integrate EDI and expand MRP to include the rest of the manufacturing (MRP II) process. By the late 1990s MRP II had been expanded to include Human Resources and other corporate functions to create Enterprise Resource Planning (ERP). The increase in the popularity of the Internet and the introduction of Supply Chain Management have added additional

electronic formats to EDI and created the much more comprehensive eCommerce. Add to this other applications, such as business intelligence and workflow, and we are now poised for our move to the virtual enterprise of the 21st century.

For some managers, the march toward the virtual enterprise is an unwelcome but necessary evil. For others, it is the key to an uncertain but promising future. Whatever the view, all agree that significant change in the business process is, if nothing else, inevitable. The march started several years ago with the shift from make-to-stock to make-to-order as retailers, finished goods manufacturers, and original equipment manufacturers (OEMs) sought to eliminate inventory by pushing it farther down the supply chain. While the upside of this new direction is reduced costs, the downside is more dependence on supplier systems, another way of saying 'putting your eggs in someone else's basket'. Supply Chain Management, Value Chain, Demand Flow Leadership, Vendor Owned Inventory, Just-in-Time Manufacturing, and Quick Response are just a few of these emerging business processes that extend the tentacles of one corporation into the bowels of another in order to make the shift possible.

The march is on. More and more businesses are joining in by 'extending' their applications and declaring Internet solutions. Those who plunge ahead without understanding what they are doing will have done little more than continue their current reactive approach to 'keeping up with the Joneses'. This will become evident as soon as the novelty of the Internet wears off and the realities of poor back-end integration with out-of-date business systems set in. Those who take the time to step back and restart from the beginning will be far more successful.

Chapter Two: What About Time?



From the beginning of time, time has helped us run 'our business'. Initially, the sun was used as the 'clock'. We started working when we could see and stopped when we couldn't. The sun was used for daily activities such as when to hunt, when to pray, and when to sleep. The moon and the stars were used for longer passages of time such as when to plant and when to harvest. As time passed, the increasing complexity of organizing our lives resulted in a greater dependence on time. The need for better measurement led to the sundial, the hourglass, and eventually the clock. We had become 'hooked' on time.

In the 1760s, time and commerce took a leap in sophistication with the introduction of precision timepieces and the establishment of Greenwich Mean Time (GMT). By using time to fix the exact position of the stars, ships could navigate with great accuracy anywhere in the world. As long as the ship's navigator had an Almanac, knew the calendar day, exact time, and the position of the stars, he was never lost. England ruled the seas and international trade for many years and as a consequence became quite rich. They did business better than anyone else. Time had united them as an entrepreneurial kingdom.

The next significant milestone came with the rapid expansion of the railroads across the United States during 1880s. Prior to the transcontinental railroad, each village and town kept its own time. However, once connected with a common (for then) high-speed technology (railroads), the resulting confusion of 'whose time was the right time' created chaos. The government stepped in, national time zones were established, and the rules of time and commerce were, once and for all, put in place.

Throughout all this change, the one thing that remained constant was time itself. A year is a year, a day is a day, and a second is a second. Time does not change. If it did, it would not be of any use. What changes is how we use time, year-by-year, day-by-day, and second by second. Understand how to use time to your advantage and you understand how to organize your day or do a better job of running your business.

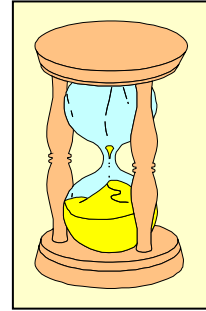
So what do we know about time? We know that time is money. Waste time and you waste money. Save time and you save money. We also know that the cost to operate a business can be boiled down to people and inventory, two forms of time. Time, therefore, becomes the common denominator of business.

People are paid based on the amount of time spent on the job -- the more time, the more money. People are not perfect. They make errors and they waste time. People are expensive.

Inventory is measured by the time to make it, time to store it, the time to move it, and the time to pay for it. Inventory also represents the time value of money. As long as you own it, you are paying for it. Inventory is everywhere. It is in the storage yard, the warehouse, the distribution system, and the shop floor. It is raw material, supplies, parts and finished goods. No matter where or what, inventory is costing somebody time and money.

Take people and inventory out of the supply chain and you take time out of the supply chain. Take time out of the supply chain and you save money. Time is overhead. Time is the enemy. Disintermediate time and everyone benefits. Your customers get the product sooner, you get your money sooner, your suppliers get their money sooner, and your banker gets her money sooner.

Time, then, is the core value, the key to the future. There are many kinds of time. There is real time, elapsed time, dynamic time, time-to-market, time value of money, interest, payment due date, cycle time, turn-around time, delivery time, take-down time, set-up time, uptime, downtime, on time, in time, at the right time, about time, timeless business, inventory turns, time cards, discretionary and non-discretionary time, lunch time, break time, vacation time, sick time, holiday time, training time, scheduled maintenance, stand-by time, overtime, extra time, premium time, and not enough time. Although the list is never ending, one thing is certain. No matter the number or in how many forms, every one of them costs money.



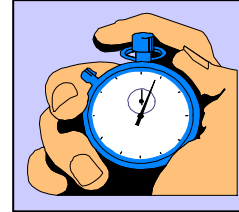
But how and where do you attack time? Rather than attack each kind of 'time', it is more efficient to group them into categories that reflect their characteristics and business purpose. By showing how they operate in the greater scheme of things, we can develop an overall feel for cause and effect. More often than not, business technology that is applied in one area will save time in another area. Such is the nature of time in the business arena. The bigger the scope, the better the payback.

Time, therefore, is the ultimate metric, the quintessential predictor of success. It is how we keep score. Manage it and you will manage your business. All you have to do is find it, identify it, control it, reduce it or eliminate it. Such is the nature of time and business. That's why it's all about time.

Chapter Three: Elapsed Time

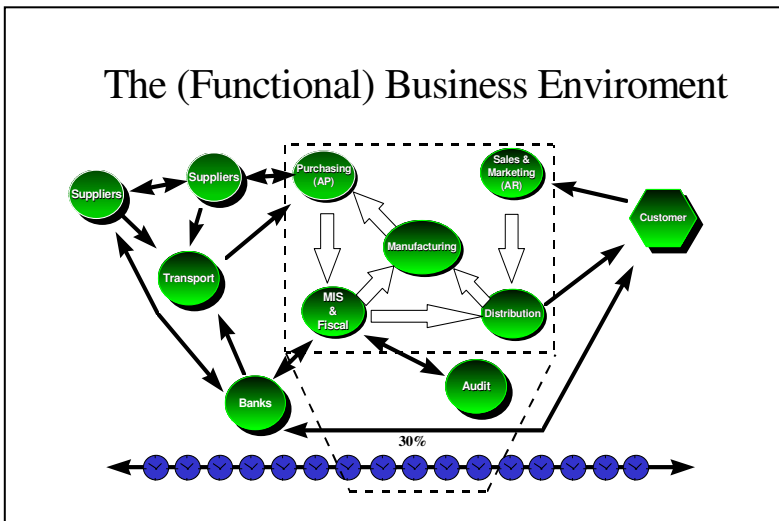
We are trapped in our current way of doing business by *function*. What I mean is that our businesses and business processes are organized around the functions found within our business infrastructure. We have the materials management function, the accounting function, the order entry function, the receiving dock function, and many more. Each of these functions can be viewed as a container of time. The connection between each of the functions can be viewed as a consumer of time.

The understanding of *function* begins with an examination of the *entire* trading cycle as it is today. The cycle starts with the customer's order (a function), which goes to Sales and Marketing (two more functions), and then on to Distribution (another function). As you can see, the manufacturer passes the order through the usual *intra*-enterprise functions -- sales, marketing, manufacturing, distribution, purchasing, accounting (fiscal), and systems (MIS). But there are many more functions. Since this is the age of distributed manufacturing -- we do not want to make things that others can make better and cheaper -- the manufacturer turns to outside support (*inter*-enterprise activities) for additional functions that are provided by external suppliers. These functions include utilities, transportation, banking, communications, government in addition to the providers of goods and services that are needed to make the product itself. The combination of the 'intra' and the 'inter' functions define the length and breadth of the supply chain from the customer's customer to the supplier's suppliers. When measured with a timeline, the chain of functions also defines the total time and cost to make and deliver a finished product.



Knowing where to look...

On the surface, the 'trick' to reducing cost is obvious -- shorten the supply chain timeline. By reducing or eliminating wasteful functions and redundant processes (and the people and inventory that go with them), manufacturers can reduce time and stay competitive. According to Michael Hammer, the re-engineering guru, these functions and the waste that goes with them constitute *elapsed* time and can represent as much as 99% of the total time expended to make a product.



Just what is elapsed time? It is the aggregate of all actions and activities that do not directly contribute to the making of a product. It is the time spent waiting for things to happen. Take, for example, the ballpoint pen you were just using. The actual work time required to make it is probably

only a few seconds. The total time expended by the entire process to make the pen is probably closer to a minute. This is because the functions that make up the process take time and the linking of those functions takes even more time. It takes time to determine the bill of materials, get

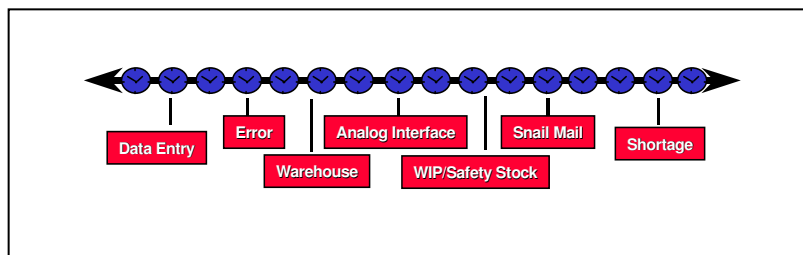
bids from suppliers, order the materials, receive the materials, check for quality, deliver them to the production line, make the product, test the product, package the product, and ship the product.

Here are some examples of elapsed time.

Data Entry. Data entry is the act of entering data from one source, usually from paper or a human, into a computer. Nothing happens until the data is entered. Of the documents entered, six percent have at least one error. This, in turn, leads to the elapsed time needed to correct the errors.

Error Correction. It is said, maybe with tongue in cheek, that one-half of the people employed in a company are there to correct the errors of the other half. There may be some truth to this if you take into account that it takes as much as 20 to 40 times the time to correct an error than it takes to make a correct entry.

WIP/Safety Stock. Work In Progress (WIP) is the inventory that sits on the floor between steps in a process. Safety stock is inventory held in reserve to keep a process going in the event there is a problem with WIP.



The Mail. At least a week of elapsed time is chalked up to 'it's in the mail'. This translates into a week's worth of inventory or a week's more interest on the money not yet paid. Information 'in the mail' cannot be acted on until it has been received.

Warehouses. The customer has not taken delivery, so the supplier has not been paid. Only the owner of the warehouse benefits from the elapsed time products spend in a warehouse.

Analog Interfaces. This is another name for humans. Humans make the most errors, most mistakes. Manual processes are the most inefficient. Remember when you played 'telephone' as a child. You know, the game where you sit in a circle and pass a message from one to another. The last person says the message out loud. It usually is totally different from the original one. Count how many humans are in the supply chain and you can see why they are the greatest source of elapsed time.

Shortage. Out-of-stock is just as expensive as overstock. The first represents the high cost of time lost, the second represents the time value of money to finance extra inventory.

...and how to find it.

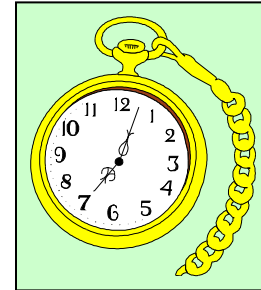
It is a relatively straightforward process to identify and eliminate elapsed time when it resides inside the box. This is because the intra-enterprise environment is under the control of a single organization, your company. You put it there so you can find it and deal with it. This is the easy part. However, most of the elapsed time (70%) -- and therefore the cost -- is *inter*-enterprise or spent going from 'outside the box' to 'inside the box.' Here the barriers to success quickly pop up

as disparate organizations with differing agendas struggle to meet the demands of the supply chain while at the same time protecting their business self-interest and avoiding unnecessary costs.

To help find and identify elapsed time I have organized it into three categories. There is real time, dynamic time, and mindless time. Each category is based on a distinctly different concept, which should make the search not all that difficult. As always, the key is to know what to look for. The next three chapters should give you what you need to expedite that process.

Chapter Four: Real Time

Real time is the most common form of elapsed time. Real time is elapsed time that occurs as an action or activity as it takes place. Real time is used to measure how long it takes to perform a function or how long it takes to exchange information between functions. It is the easiest to identify and usually the easiest to reduce or eliminate.



Since the opportunities to save time up and down the supply chain are just about everywhere, the responsibility for its identification and reduction falls to a wide range of skill sets. The industrial engineers focus on the factory floor. The material managers worry about the inventory. Transportation managers concentrate on moving the goods. The newest group, the supply chain managers, work with everyone else to tie it all together.

There are also two new technical forces -- *interoperability* and *configurability* -- and one cultural initiative -- *collaboration* -- at work in the battle to reduce or eliminate real time. Understand them and how they work together and you will get a leg up on achieving even greater reductions in real time.

Interoperability

Interoperability is the ability of one company's applications to exchange information with the applications of another. To appreciate the importance of interoperability is to accept that in this day and age, businesses are no longer islands in the supply chain stream and that their business systems can no longer be confined to internal processes and programs. They must now become part of a much larger and more complex inter-enterprise system that depends on cooperation with all of its trading partners -- customers and customers' customers at the front door and suppliers and suppliers' suppliers at the back. This means, among other things, carrying your customers' inventory and requiring your suppliers to do the same. This also means that the performance of the supply chain is determined by the degree to which it is interoperable.

Configurability

Interoperability is a must. It can save time. But if it is achieved only through time-consuming processes that make it hard to make changes, then the advantages are quickly lost, particularly for fast moving industry segments like retail and manufacturing. Therefore, to be truly effective, interoperability also has to be highly configurable.

Configurability means the ability to make changes in the business process without having to make changes to the application source code. Changing the code to reflect a change in business requires designing, programming, coding, compiling, testing, fixing, re-compiling, and going live. This can take forever. A better way is to take a business rules approach and apply it through table driven software, object technology, Java applets, semantic messaging, XML and other middleware devices in the environment outside of the application. This way, any process can be reconfigured in real time as quickly as the rules and tables can be changed.

Collaboration

No two trading partners, much less their business systems, are the same. Even two partners with the same brand of business system will not use that system in the same way. Every business is different. This is the problem and the reason why, since the beginning of time, we have had to use humans to collaborate by using the phones, to re-key the data to make it fit our way of operation, to

expedite the orders to keep the customer happy, to work with the customer or supplier to correct the errors and clear up the misunderstandings, and, above all, to make the process work as the solution.

But humans are expensive, can only work so fast, and are prone to make mistakes. Lets face it, humans make errors and waste a lot of real time. Therefore, the solution is to replace the humans with technology, to replace the middlemen with middleware – the configurable, interoperable, collaborative technology of the collaborative supply chain. Although eCommerce and the Internet have made it easier to move data up and down the supply chain, it is the middleware that reduces time at the back end and makes it easy to use at the front end. It is the collaborative practices, procedures and timesaving technology in the middle that provide the logic, makes the adjustments, and otherwise resolves the complexities of the business that connects trading partners. It is the use of industry standards and business modeling that can make it possible to collaborate earlier in the process to bring forecast closer to production capability and monitor the supply chain process in real time as it progresses from the order to delivery to payment. Chose the right solutions and improve your ability to collaborate and you can really save time – real time.

Find it, eliminate it.

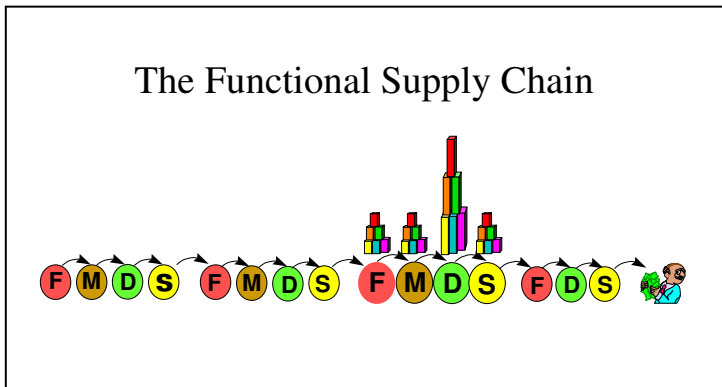
Real time is the easiest time to find. It is there for all to see. It just takes time to find it. Eliminating it, however, is a little more difficult. If you kill it on the spot, it will probably show up somewhere else in another part of the process, often taking longer that it did in the first place. After all, at the end of the day, it is the total amount of time that counts, not just that of one step.

The bottom line is that you can't eliminate real time without replacing it with a 'better way.' This is where interoperability, configurability and collaboration are pressed into service. The more time spent here, the more likely you will 'do it right the first time' -- the more like you will eliminate real time. Really.

Chapter Five: Dynamic Time

Although dynamic time has been with us longer than we realize, its importance has only been appreciated in the past few years. The number of supporters who think managing it will be necessary for survival appears to be growing daily. It is complex, difficult to understand, and even more difficult to manage. However, once understood, controlling it can yield significantly greater results than we can get from real time.

The first step on the circuitous road to understanding time is to appreciate the difference between a *function-based* supply chain and a *process-based* supply chain. Let's begin by re-describing the supply chain timeline using the four main functions found in the typical manufacturing or business environment: Fulfillment (materials management), Manufacturing, Distribution, and Sales. These four functions operate as if they were individual 'companies' within the company. When we string them together, from the supplier's supplier to the customer's customer, we have a representation that looks like this.



Notice that each function responds to the function to the right. This means that each function keeps a certain amount of inventory to 'protect' its 'customer.' Fulfillment keeps some inventory for Manufacturing. Manufacturing does the same for Distribution. Distribution keeps the inventory for the entire company, *plus* some for Sales. Sales has a special inventory for their special customers. (And we know why there is a 70% forecasting error rate in most supply chains.)

Although we have now described the look and feel of a function-based supply chain, there is more to this story. To really understand why functions are a barrier to saving time and what it will take to make any changes, we need to drill down into the basic concepts of *constraint management* and *supply-chain dynamics*.

Constraint Management

The Goal, an icon book on this subject written by Eliyahu Goldratt, does a wonderful job of describing, in rather easy-to-understand terms, the concepts of bottlenecks and constraints in the manufacturing process. In his book, Goldratt points out the importance of identifying bottlenecks as the main reason for waste and the inefficient accumulation of work-in-process (WIP) inventory.

To illustrate the importance of identifying bottlenecks and using them as the controlling events in the production process, Goldratt talks about a boy scout troop and their task to move as a group from one campsite to another in the shortest amount of time.

To paraphrase... the troop has two characters of importance: Speedy Steve and Slow Joe. The question is which character do you put at the head of the line? The first inclination is to put Speedy in front and have him lead the way. The correct answer, however, is to do the opposite. Slow Joe goes in front. The reason is that the clock does not stop until Joe makes it to camp anyway, so

putting him in front and saving the energy of those faster scouts who have the ability to maintain the pace produces the best result with the least amount of waste.

The same principle applies to the manufacturing process. Let's assume, for example, that it takes 10 steps to make a certain product. Management, in their continuing effort to get the best performance out of each step, discovers a way to improve the performance of Step Three. As each improvement is made, they pat themselves on the back and declare victory.

What the managers do not realize is that with each improvement the net result is a cost increase, not a decrease. The rationale is that the greater the productivity of Step Three, the more WIP inventory that accumulates at Step Four. More WIP translates into more cost. The lesson from Goldratt is that in order to keep WIP inventory, and therefore costs, to a minimum, focus on the slowest step in a process and let it drive the rest of the process. In other words, drive an operation with Slow Joe as the constraint and you will create the least amount of inventory and therefore carry the least cost.

Supply Chain Dynamics

Goldratt wrote his book over 15 years ago. More recently is the rediscovery that supply chains behave more like rush hour traffic than as a group of boy scouts marching in lock step. To explain...

Non-rush hour traffic moving on the freeway at the posted speed limit provides the most efficient throughput. Let's say, for example, ten cars moving by a fixed point at 60 MPH represent a throughput value of 600 (10 X 60). When you repeat the same test during rush hour, with an average speed of six MPH, you would think that the throughput would be the same. Although the speed is one-tenth, there would be more cars (100), so the answer should also be 600 (100 X 6). But anyone who has been there knows this not to be the case. The throughput is much less.

Why? At 60 MPH, each driver 'marches to the beat' of the speedometer. There is little wasted energy. However, during rush hour, each driver marches to the signal from the car in front. Most of the energy is absorbed by the accordion effect of constant starting and stopping. Very little is left over for throughput.

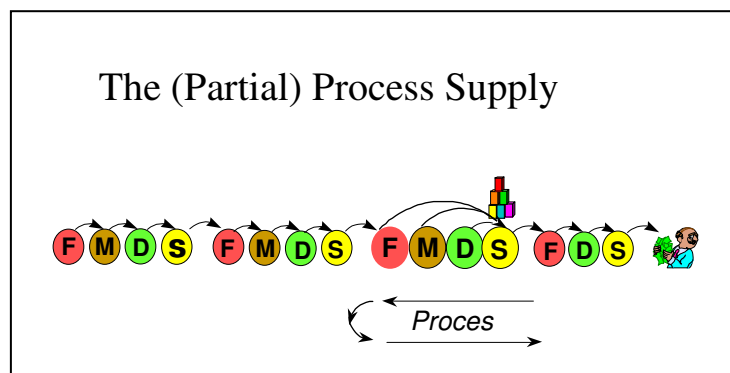
And so it is with today's supply chain. Each function in the supply chain marches in response to its next closest function. A 10 percent increase in orders, for example, can result in an over production of 40 percent and an excess inventory of 30 percent. Consequently, by the time a product makes it to the consumer, the cumulative effects of dynamic time can be rather significant.

Marching to a Single Drummer

Are you still with me? Good. Now let's use constraint management and supply chain dynamics to reduce dynamic time. This trick is to think 'process-based', and not 'function-based'.

You can't do it all at once, but you can begin with what you control – your own business and the links to your immediate suppliers. So let's start by converting our business from function to process-based and

select Sales as the only drummer for our business. This will result in the immediate reduction of



dynamic time and WIP inventories. We only need a finished goods inventory. The other inventories can be transferred to our suppliers or eliminated altogether. With the reduction in inventory comes the reduction in the people and time to manage it and the space to store it. The reductions can be considerable.

Dynamic Time

The dynamic time elimination technologies are here today. The major players in the automotive, retail, and grocery industries have been using them since the mid-1980s. They passed their cost on to their suppliers -- the suppliers carry the inventory -- a long time ago. The problem for the rest of the chain is that the suppliers have not been passing the inventory costs on to their suppliers. The chain is broken and the synchronization stops. Dynamic time kicks back in as process-based thinking stops and function-based thinking returns. The suppliers, whose only thoughts are to keep their customers happy, choose to take on the additional costs. For them, it is business as usual. They just don't get it. They do not understand dynamic time. Consequently, the overall supply chain costs remain relatively unchanged and nobody really wins.

Chapter Six: Mindless Time

The kinds of time we have discussed so far are what could be called direct time. They are generally associated with a specific process or directly in support of that process. There is another kind of time, however, that can be just as wasteful, perhaps even more so. It is indirect time, or what I call *mindless time*. Mindless time is time that should not even be there in the first place. But it is there, and here, and everywhere, sometimes hard to find, other times so obvious that we can't see it. Here is a tutorial on its two major forms.

To be discretionary or non-discretionary, that is the question

Prior to the 20th century skilled work was performed only by craftsmen or tradesmen. A cabinetmaker, for example, was a craftsman who knew his trade and applied it in his own special way. The customer dictated the size, shape and color of a cabinet, but it was the craftsman who had to determine how to make the cabinet. The craftsman had complete discretion as to the best way to cut the wood, shape it, glue it, and apply the finish. He had to think.

Then along came the 20th century, Henry Ford, and mass production. Henry paid his workers the unheard-of wage of \$5 a day *not* to think. Henry thought for them. They had no discretion as to how to perform their job. They had to do each task the same repetitive way, over and over again. Non-discretionary tasking was introduced into the workplace. It was mindless, but it was efficient, and it is what made the United States the world leader in manufacturing well into the 1960s.

The 1960s also introduced the computer and the computer programmer. But no one knew how to think for the programmers. They had to think for themselves as they decided the best way to write their programs. They represented the return of the discretionary worker and the first thing they did was to create databases and eliminate the need for non-discretionary file clerks. By the 1980s, the non-discretionary factory worker was replaced by robots and computer controlled machinery. Today we are poised to attack the last bastion of *non-discretionary* tasking -- the business office and the business office process.

The business office is where Marvin-the-Matcher works. Marvin is in accounts payable and his job is to open the mail, find the invoices, match them with the purchases orders and receivers, and if they match, enter the data that issues the check. Marvin exercises no discretion as he carries out his mindless work. If the papers do not match, then he turns them over to the buyer who is the only one who can exercise the necessary discretion to remedy the problem.



The time it takes Marvin to match each set of documents is measured in minutes. Multiplied by the number of sets, the measurement quickly grows to hours. It is linear. As the business grows, so grows the number of Marvins and with them, the amount of *non-discretionary* time.

Non-discretionary tasking is the enemy. Find it and eliminate it and you will save a ton of time and money. Non-discretionary tasks are prime candidates for elimination by computers and electronic business technology. If Marvin's company sent out EDI purchase orders and received EDI invoices, a computer would be doing the matching in seconds. Only the exceptions would go to a human -- the buyer -- while those that matched would move instantly to the next automated step in the process.

Marvin and the mindless time he consumes would no longer be needed. Marvin would become an endangered species.

Redundant -- Time After Time

We already have most of the information we need to run our businesses. We don't know it, won't admit it, or just don't know where to find it. It's everywhere, but it's hard to see. So instead of looking for it we take the path of least resistance and make it redundant. Not only does this take untold amounts of time, but even more time is wasted trying to keep all copies current.

The key to eliminating redundancy (and the time to create and maintain it) is to know where to look for it and learn how it got there. Here is one example of how the State of Oklahoma found it, eliminated it, and saved millions of dollars in the process. The drivers were winners too. They saved some time as well.

In the early 1990s, I would often drive my son through Oklahoma to his college in Dallas. We would stop at the east entrance of the Will Rogers Parkway, be handed a ticket by the attendant, and move on west. We exited at Big Cabin, handed the ticket to the attendant, and paid the \$1.20 toll.

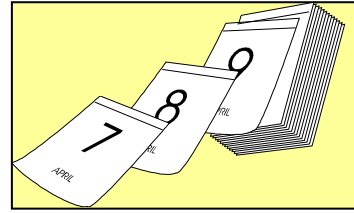
The last time we made the trip there was a change. We were greeted at the entrance with a boarded up tollbooth. "Aha," I said to myself, "they finally eliminated the toll." Imagine my surprise when we got off at Big Cabin only to find the tollbooth there was still in operation. "That will be \$1.20 please," said the attendant. Then it hit me. The State of Oklahoma had figured out how to eliminate the expense of gathering information they already knew. What happens when you lose your ticket? You pay the maximum (default) toll for that exit point. Where do most of the cars enter a toll way? At either end. For years Oklahoma had been paying millions of dollars to collect information they already knew. They found 'redundant data', eliminated it, and saved mindless time.

The Mindful Solution

If you know how to spot non-discretionary tasking and find redundant data, you can eliminate most of your mindless time. You just have to make time or take the time to do it. After all, its just all about time, isn't it?

Chapter Seven: Murphy's Time

Bad things happen all the time. No business is immune. Bad things happen when you least expect it and when they do happen; they disrupt and delay your business processes, big time. This is what Murphy's Law is all about.



What is Murphy's time? It is many things. It is the elapsed time consumed by the timeline each time Murphy's Law is pressed into service. It is the time it takes to discover the problem. It is the time it takes to fix the problem. It is the time wasted on the wrong activity or the inactivity as a result of the problem. Added up, it is measured not in seconds and minutes, but in hours, days, weeks and sometimes months.

The reason why Murphy's time is so wasteful is that by the time it is recognized, it is already too late. This is because of the 'pull' architecture of our information systems and business processes. If we want to know something, we have to go look for it. If, for example, the production of your green widgets suddenly stops, you have to search for the cause. You find out that you are out of green paint. Why are you out of green paint? Did you forget to make the order? The trail of possibilities is long but you eventually determine that the green paint did not arrive at the receiving dock on the requested delivery date. You call the supplier. The supplier calls the trucking company. The trucking company finds the paint in another city – the wrong city. What is the best way to get the green paint? Ship more or reroute the original shipment? Meanwhile the production line is shut down and the customers are not getting their orders filled. Talk about wasted elapsed time. There is plenty to go around up and down the supply chain as each link gets its fair share. Everybody shares in Murphy's time.

You cannot eliminate Murphy's Law because it is just that, a law. But you can do something about it. The sooner you find out when Murphy strikes, the sooner you can take corrective action. The sooner you find out, the sooner you can reduce or eliminate Murphy's time. The solution, then, is to know when Murphy strikes, as he strikes...so you can strike.

SCEM

We know about Murphy's time and with help from the newer Internet technologies, we are now doing something about it. As the result of the renaissance of Dynamic time (Chapter Five), we are starting to separate event information from the 'linear' activities that make up the supply chain and share it with all of the players at the same time – at the time of the occurrence instead of the time of the consequence. The new early warning system technology is called Supply Chain Event Management (SCEM). The idea is to install triggers at key points in the supply chain where events critical to the process occur and link them to a shared infrastructure. Then, when the green paint 'well' is about to run dry, everybody up and down the supply chain is notified and can make appropriate plans. The information 'moves' well ahead of the action. The potential for this emerging technology is unlimited. Not only can all who are involved take the pulse of the entire process, but also benchmarks and best practices can also be incorporated for overall management and improvement. When you think about it, the potential is rather exciting. Imagine, Murphy's Time no longer as the enemy, but as your new best friend.

Chapter Eight: Time as a Matrix

Time is no longer only linear. When life and business were much simpler, time was used to measure a series of consecutive events or steps in a single direction. Plow the ground, till the soil, sow the seeds, tend the plants, harvest the crops, and take them to market. Mill the grain, mix the flour, heat the oven, and bake the bread. Assemble the materials, make the product, and place it on the shelf to be sold...all nice and orderly, all in a straight line. That was then. Now time has two dimensions -- linear and matrix.

Time became a matrix when it took less time to find out about something than it took to do something about it. Whether it was television, personal computers, pagers, cell phones, or the Internet, 21st century technology has enabled time to rapidly shrink to where, today, it is virtually zero. Now anyone and everyone can hear the same new song, see the latest movie, or wear the latest fashion, anywhere in the world, all at the same time. This is possible because time is no longer just linear -- it has also become a matrix.

Take your personal life for example. While you 'run' by the clock, you really are controlled by your calendar. Your calendar is a matrix. You find places to 'fit in' time, to pencil in a schedule. Gone are the days of "what do you want to do tonight?" They have been replaced by "I can fit you in next Thursday." Someone wants to take you to lunch. You check your calendar. Where can you fit it in? Little Billy has soccer practice but his sister has a dentist appointment at the same time so whose schedule will be changed. And what about dinner? Life may be linear, but the time that organizes it is not. It has become a matrix so we can make everything fit.



What has happened to our personal lives has also happened to our business lives. One drives the other. While we would like to 'operate' one step at a time, this modus operandi is no longer possible. The days of time and motion studies and statistical process control are gone. We are now more concerned about set-up and change over time than widgets-per-hour. The business process is no longer a series of consecutive steps under the control of a single entity but the coordination of concurrent activities across multiple entities in a virtual environment. We are at the mercy of the fickle and demanding consumer. If the consumer operates on matrix time, then so must we as a business.

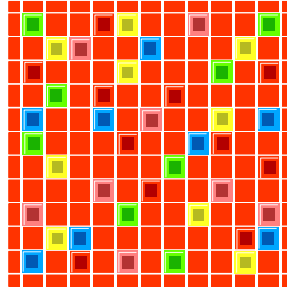
Just what is matrix time?

Matrix time is the characteristic of time that requires thinking, managing, coordinating, and executing multiple tasks or events, separately from those tasks or events, at the same time and in 'real' time. It is what secretaries and middle management did before they were replaced by technology in the 1980s. It is the juggling of time and resources to produce results on demand. It is the juxtaposition of input and output in today's business environment where the complexities of demand and distribution are greater than the product produced.

Matrix time requires a different mind-set. Think about time in linear terms and you will be late every time. Think of time as a matrix and you might just keep up. This is why matrix time is important to running a business. Matrix time is time to develop and time to market. It is the time to react to market changes. It is computer time. It is Advanced Planning Systems time. It is Enterprise Resource Planning time. It is Palm Pilot Time.

How important is matrix time? Very. It is critical to running a business in the new century. More importantly, however, is the ability to recognize the *difference* between linear and matrix time. It is

when you are thinking 'linear' when you should be thinking 'matrix', that bad things begin to happen. One is not necessarily better than the other, but if you can't tell the difference, think matrix just to be on the safe side.



Chapter Nine: Time as Service

Have you heard the story of the 'difficult' customer at Ben Franklin's Philadelphia print shop who did not want to pay full price for a certain book? It goes something like this...

Customer: How much is this book?

Clerk: One shilling, sir.

Customer: But I don't want to pay a shilling, I want to pay ninety pence.

Clerk: I am sorry sir but I can't sell it for that. The book is one shilling.

Customer: Well then, let me speak to Dr. Franklin

(The clerk goes to the back of the shop and returns with Ben Franklin)

Dr. Franklin: How may I help you sir?

Customer: I would like to buy this book. How much is it?

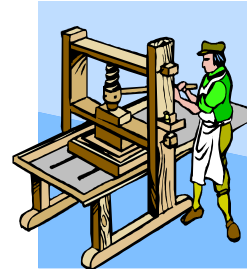
Dr. Franklin: One shilling, twenty-five pence.

Customer: But your clerk said one shilling.

Dr. Franklin: Yes, but that was before you involved my time. My time is valuable, which is why I have a clerk.

Customer: But I want to pay less, not more. What is the real price of the book?

Dr. Franklin: It is now one shilling, fifty pence.



The point is that service takes time and therefore adds to the expense of selling a product. Ben Franklin knew this was true in his time, we know it to be a fact of business today. As products become more like commodities, it is the service rendered that is often the differentiator. In the new century we will no longer sell products – we will sell services.

As we said before, services take time and in many cases, more time than it takes to make a product. Time as a service therefore becomes not only of greater value, but also of greater cost. If well conceived and managed, it can make the difference. If not, it can put you out of business.

Time as a service can take many forms. Here are a few of the more obvious ones.

Customer self-service. Self-service is a salad bar, the convenience store gas pump with a card swipe, the ATM, and direct-dial long distance. It is the Red Phone at Target. It is the kiosk in the department store lobby. It tells customers if their flights are on time or how much money they have in the bank. It has to be as easy to use as the telephone or an Internet browser. Good customer self-service eliminates waiting. It also saves head count, time and money.

A needle in the haystack. Amazon.com is a great example. Amazon is used not so much to buy a book but to save time finding an elusive title. Anybody can sell a product. Helping customers to find the product they want is much harder and therefore of greater value. Service wins the race every time.

The Moment-of-Truth. Finding out that one of your flights has been cancelled is one thing, but your immediate concern should be for your customers and what you are going to do about getting them to their destination. If you are fast enough, your customers will be understanding and forgiving. If you are not, the animosity will build, quickly. This is where time really counts. You have about 90 seconds to make or break your customer relationship. That is why it is called the Moment-of-Truth.

Bricks and mortar (vs. clicks and order). Time to consumers is a net sum game. If an item is easy to buy on-line but difficult to return, the time advantage of the Internet quickly fades. Thus, in the long run, e-business with bricks-and-mortar will prevail – even more so the other way around --

bricks-and-mortar with e-business. Wal-Mart knows this and welcomes the Internet. Their customers can save time using it at their stores or in their homes. They don't care. Business is business and service is the most important part of the business.

Some assembly required. There is more to a product than the product itself. There are the installation instructions, service bulletins, engineering data, hazardous warnings and material safety data sheets. For some products the list can be quite long. Having this information and more at your customer's fingertips saves them time and saves you money.

Don't call us, we'll call you. The technology of time is being taken to the next level. The next generation of appliances will call the manufacturer when something goes wrong. The manufacturer's computer will analyze the problem and give you a call with the answer. This is service with a capital 'S'.

Anything for a drop of water. When time is critical, anything helps, even telephones on airplanes. Although telephones on airplanes are too expensive for normal conversation, they are worth every dollar in time critical situations. It is the expediency, the urgency, the need to save as much time as possible that proves the point. When only time counts, it is the ultimate service.

Service, service, service. By now you've got the message. The three most important parts of any business are service, service, and more service. Not just any service, but service that is on time, at the right time, and in no time. If your customer saved time ordering your product on the Internet but spent that time or more returning it, then where are the real savings? In other words, you have to look at the whole business cycle if you are going to be the long-term winner, especially the service part.



Chapter Ten: e-Time



When it comes to the 21st century, e-time and the Internet are showing the way. If you are web literate, you are already operating on e-time. You do this in countless ways. You can order anything you like at any time you like from any place you like. Your e-mail is faster and better than the telephone. If you need instant conversation or the latest gossip, your hot mail can let your friends know that you want to talk. You are always 'connected' so you don't have to wait. You are never more than a few seconds away from the rest of the world. A click of your mouse is just as fast as the click of the TV remote control. You flutter and hop and surf and

if you don't like what you see, you flutter and hop and surf some more until you get what you want. 24/7 is the new hip term that says it all. You are in the age of *demand at the speed of a whim*.

What I have just described is already at work for consumers. But what about business? Because the business-to-business relationship is far more complex the answer is less clear. I am not sure if *e-Time* for business is really here yet but I am sure that when it finally arrives the effect will be nothing less than spectacular. Here is why.

When I ask a group of executives if they play the game of baseball, quite a few will answer in the affirmative. When I ask how many of those who said yes only play catch in the back yard with their kids or with a friend at the beach, most will say that this is what they really meant. What they didn't realize is that there is a big difference between playing catch and playing a real game. Not only does it take 18 people to play a game, but also the concept is much more complex. Playing catch is a single event or stand-alone activity. Time is not a factor. Playing a game is a series of events that are not only interrelated but are also non-stop. The batter steps up to the plate. The pitcher delivers the pitch. The batter hits a grounder behind the runner. The second baseman fields the ball and throws it to first base while the runner takes second. The batter is out at first and the ball is returned to the pitcher. The sequence of events defines an activity that is continuous and takes only seconds.



When I ask the same group if they are also doing EDI or eCommerce, the majority will respond in the affirmative. But when I ask how many have more than a read-only website or have integrated their site with their host application, most of the hands come down. The reasons are the same as for baseball. Most businesses that are doing EDI are only playing 'catch.' They 'throw' an occasional electronic purchase order and 'catch' an electronic invoice. There is no integration with any system. It is rip-and-read EDI all the way. The same goes for their eCommerce. All of their activity is at the front door.

There is a connection between real baseball and real e-business. Like the game of baseball, the 'game' of e-business as 'played' by the major retailers and automotive OEMs is a sequence of non-stop events. A customer removes a product from the shelf and brings it to the checkout station to be scanned by the cashier. The captured point-of-sale information is then sent to the store computer where it is consolidated with other scans and forwarded to the home office. The home office combines the store data with the data from the other stores, makes adjustments for upcoming sales or seasonal changes, and sends the data electronically to the appropriate vendors. The vendor's ERP system receives the data, plans the next production run, and places replacement stock on the shipping dock in pre-labeled cartons. As they are loaded, the truck driver company scans the cartons and then delivers them to the distribution center where they are scanned again

for automatic redistribution to each store. The cycle is completed as stock clerks unload the truck, open the cartons, and place the contents on the shelf. The entire process can take less than 24 hours, which in retail terms is no time at all.

Although different in the specifics, the concepts for the automotive industry are much the same. The assembly cycle is conducted at light speed without interruption and with as little human intervention as possible. Once a car starts down the assembly line, nothing short of an emergency stops the process. The parts and sub-assemblies just seem to appear as needed at the right time and in the right order. The entire process is orchestrated electronically.

For most business processes, the time between the events becomes the target for *e-Time*. In fact, in many cases, the time between events can be almost totally eliminated. But there is more. When businesses start taking advantage of CPFR, pre-indicators and SCEM, e-Marketplaces, and the Collaborative Supply Chain (cSC), *e-Time* really kicks in.

Collaborative Planning, Forecasting and Replenishment (CPFR) is the latest tool in the battle for *e-Time*. CPFR is a process where the vendor and the retailer work together in iterative electronic cycles to remove time and waste from the supply chain. Not only is CPFR working, but it is also making the customer-supply relationship a much more cooperative one.

Pre-indicators are used to predict when a consumer, might buy a particular product. Pre-indicators are used when point-of-sale information cannot do the job. POS only tells you what has already happened, what was already purchased under circumstances that may no longer be the same. POS information, for example, is not useful for seasonal items or products that are dependent on the weather such as antifreeze or lawn care products. What sold last week may not be what will sell next week. The manufactures and retailers of these products don't want excess inventory when there is little demand or stock-outs when demand is high. The solution in this case is to use the weather forecast for each store as a pre-indicator, to predict the demand for these products. This is *real e-Time*.

Supply Chain Event Management (SCEM), previously discussed in Murphy's Time, can also be used to pre-indicate when something positive is about to happen. The key here is by separating information from activities and moving it independently, information can be shared well in advance of impending events, actions or activities. (More on this a later when I will talk about the paradigm shifts in the 21st century in Chapter 18 - The Time Is Now!)



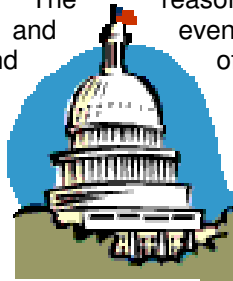
e-Marketplaces, public and private, such as Transora (Retail), Covisint (Automotive), Commerce Once, and Ariba (MRO) are the birth children of *e-Time*. Although the results so far have been somewhat disappointing (only auctions have been successful), the marketplaces are here to stay. They are the B2B pioneers that will deliver true *e-Time* to the supply chain.

The technology that makes the supply chain really work is the technology of the Internet and *e-Time*. The strategy of *e-Time* is to facilitate and/or increase the ability to collaborate. The strategy and the technology work together, hence the term collaborative supply chain (cSC). The key word here is collaboration. If you collaborate, you reduce *e-Time* (and all of the other times as well.) The better the collaboration, the better the use of *e-Time*, less time it takes to do business.

Even the Federal Government is getting on the *e-Time* bandwagon as they revolutionize the way they do their business. As the largest consumer in the world, they have a lot at stake. They are making waves on two fronts. First, they are (trying to) present them selves as one customer through a single portal. Vendors no longer have to deal with each department or agency as if it was a separate customer. Vendors can now register electronically with any agency and be automatically

registered to do business with the entire bureaucracy. This initiative alone should save significant amounts of time for both the government and the vendor alike.

The second and more exciting front is in the area of bid solicitation. For most procurement, governments and other public institutions are required to solicit competitive bids and award contracts to the lowest bidders. Although it has the benefit of lowest price, this process is labor intensive, administratively expensive, and time consuming. In a typical paper-based procurement, the buyer solicits bids from three to five vendors and makes a contract award to the lowest bidder. Even though the solicitations are open to everyone, the reality is that the same vendors bid on the same procurements time after time. The reason for this is time itself. It takes extra time to grind through the paperwork and even more time to wait for payment. Not every business wants to spend this kind of time. As a consequence, governments do not always get the best buy.



With e-business, governments are now able to get the lowest price. Requests for Quotes can now be published electronically in a prescribed format to a wider pool of vendors. The vendors can respond electronically in a standardized electronic format that enables computerized bid analysis and award. Government agencies can now receive and evaluate a virtually unlimited number of bids in no time at all. Everybody wins. More vendors get the chance to bid and governments get what they want, at a lower price, and in less time. They not only pay less for the product but also for the expense of procurement. Government at the speed of e-Time! Who ever heard of such a thing?

e-Time is here to stay. Big business is collapsing the future as they remove ever-increasing chunks of time. As e-Time filters down to the other 90 percent of businesses, the small in medium sized business that supports big business, and is used to build truly collaborative supply chains, the use of e-Time will really accelerate. Business will be faster than ever. To play on the words of comedian Chris Rock at the *MTV Video Music Awards*, "It used to be that music was here today gone tomorrow, now it is here today, gone today." The same now applies for businesses in the 21st century. Scary isn't it?

Chapter Eleven: Quality Time

No, we are not talking about the time working parents set aside for their children. This kind of quality time is good and the more time we spend as quality time, the better. The quality time we are talking about is the time we lose because of poor quality. The measurement is just the opposite. The less time spent, the better. Like the game of golf, the lowest score wins.

Just what is quality time? Zero defects. Quality is Job #1. There is never enough time to do it right the first time but always enough time to do it right the second, third, or fourth time. We have heard these slogans before and the reason is quite simple. Poor quality translates into extra time, quality time. Quality time is the time we spend adjusting, correcting, returning, or discarding because of poor quality. Quality time is time that left unmanaged can be quite extensive and expensive.

In the 'old' days, when labor was cheap and time was less of a concern, our focus was on the making of quality products. Quality was 'assured' at the end of a process. Quality Assurance (QA), a separate department with its own staff and budget, tested finished products. Those products that passed were placed into the distributions channel, those that failed were returned for rework or sent to the junk heap. As labor costs rose, the QA approach became more expensive and overtime, was replaced by quality checks at the end of each step in the production process. Total Quality Management (TQM) was in, QA was out.

Today, quality has become an obsession. Stopwatches and testing stations are everywhere. Statistical Process Control and Computer Integrated Manufacturing are on the shop floor, while EDI, bar coding, and workflow are being deployed to take time out of the overall supply chain process. Six-Sigma has become the mantra of the production department as companies large and small compete for the national recognition of the ISO 9000 and the Malcom Baldrige Award.



The goal is to identify poor quality as it occurs, the sooner the better, and make the correction on the spot. The math is simple. If the poor quality is discovered at the point of infraction, quality time is kept to its absolute minimum. There is no time wasted on the continued production of products that will sooner or later be discarded. Even if the entire process is shut down until the poor quality is corrected, it is still cheaper in the long run.

Quality time management means touch labor empowerment. It is now the responsibility of the assembly line worker to discover (and if possible, correct) the poor quality. If it can't be corrected on the spot, the employee can "hit the red button" and stop the whole process. Not only does this save time but it also eliminates the necessity of creating and funding a separate testing staff.

So when it comes to quality time, less is more. Think process, not product. It is a quality process that produces quality products, in less time and with less costs that counts. So do it right the first time and you will save time. After all, it is the quality of the time spent that really counts.

(Note: For more on how to create quality time, research the concepts and practices of Six Sigma)

Chapter Twelve: Customer Time

At this point in our journey through time we have discussed the different kinds of time that are common across all businesses and business processes. Time, as a perspective, is another way to talk about time. In any business process, there are customers and there are suppliers. Since every business has at least one in each category, it may be useful to look at time from their points-of-view.

Let's begin with customers. (We will get to suppliers in the next chapter) There are two types of customers at your front door -- your business partners who are the next link in the supply chain, and the consumers who are the end user of your goods and services. Business partners can be distributors, retailers, or original equipment manufacturers (OEM). They can also be finished goods suppliers to retailers or first tier sub-assembly manufacturers to the OEMs. Consumers can be individuals, groups, and also business partners. They can be just about anybody upstream in the supply chain.

Regardless of which type, customers have essentially the same characteristics. They are either in charge or want to be in charge. They enforce the first golden rule of business – “He who has the gold, makes the rules.” Customers want what they want when they want it. They do not want inventory. They just want your product or service when they need it and not before. With customers, *your time is their time*.



From an Internet (e-Time) point-of-view, customers can be both business-to-business (B2B) and business-to-consumer (B2C).

B2B customers are business partners with applications. They want their application to talk to their suppliers applications in order to save time and money. They are heavy users of time technologies such as EDI, JIT, ECR, QR, VOI, and VMI. As a consequence their problems become your problems, instantly. For them, time is a matrix. They will provide you with a variety of inputs and expect you to respond to every one of them.

B2B customers have worked with their suppliers for a long time to build a relationship. They have made an investment in that relationship and want to see it survive and prosper. While they are patient and understanding, they are also difficult to deal with from time to time. But one thing is for certain; they are concerned about how you manage *your time* because it has a direct effect on how they manage *their time*.

B2C customers, on the other hand, are application-to-human business partners or off-the-street consumers. Because there is no contractual or technical link, they are much more independent than B2B customers. If you sell a commodity and have lots of competition, your B2C customers will be very impatient. If they can't find what they want in a minute or two, they will look elsewhere. Their expectations are high. On the other hand, if you have the 'only product in town', they are happy they found you and will spend whatever time is necessary to get what they want.

Here are a few rules-of-thumb for customer time that should be followed when it comes to designing your collaborative supply chain.

- Provide a single portal for all services. Changing access points is as easy as changing suppliers.

- Use enough sizzle to keep their interest but not so much as to try their patience. For repeat customers, site novelty wears off quickly so provide some short cuts.
- Watch your bandwidth, particularly if your business is seasonal. Access time is critical. What only takes a second or a few minutes seems much longer to the user. It's all in the perception so provide some entertainment or suitable distractions when your site gets overloaded.
- Visit other suppliers and pretend you are their customer. Don't just go to your competitors but try other industries as well.
- Offer customer self-service by linking to your backend systems. The more information customers can get for themselves, the higher their satisfaction and the lower your costs.

One closing thought. The customer side of your business is one-to-many -- one business to many customers. It is the 'safe and simple' side. The revenue is linear. An increase in customers usually means an equal increase in revenue. With today's technology, the cost of serving additional customers is usually fractional – a doubling of customers will only require a fractional increase in hardware and expenses. Your competition is already well aware of this so the race to reduce time and cost has already started. The winner is the one who runs the race in the least amount of time – customer time that is!

Chapter Thirteen: Supplier Time Is Your Time

There is no such thing as a price advantage. Any fool can lower prices. The challenge is to find a way to make money while doing it. The competitor with the real advantage, all other things being equal, is the one with the lowest costs, not necessarily the lowest prices. Now if you can find a way to have a cost advantage then you have something to talk about.

...CNN

The supplier side of your business is where you reduce your costs and protect your markets. The supplier side is the home of business-to-business (B2B), just-in-time (JIT), and maintenance, repair, and operations (MRO). It is where you have the control because you are the customer and you get to make the rules. It is where you get even by applying the second golden rule of business, "Do unto others as they have done unto you." If your customers require you to carry their inventory, then this is your opportunity to require your suppliers to carry your inventory. You have to be in charge – it's how the system works. If your suppliers are not happy, that is their problem. On the other hand, if you let them take control, then you suffer. You have to make the rules because *their time is your time*.

Let's start with B2B. B2B positions you in the middle of a many-to-many business relationship. You have many customers at the front door and many suppliers at the back. You are providing value by being in the middle. You are the point of concentration, the gatekeeper for business flow between the two groups. This is where you have the most control. This is where *you* control time.

B2B offers greater revenue potential than B2C. Over the next few years, gross B2B revenues are expected to exceed B2C gross revenues by a factor of ten. The future is clearly in B2B. Not only is there more money to be made and more players to make it with, but the business relationships are more complex. Thus, the supplier side of B2B time is exponential, both in effort and reward. The increased complexity of B2B offers more opportunities to provide greater value and to save more time – supplier time.

JIT, the lifeblood of the automotive industry, is another example of supplier time. Good JIT reduces the costs to the OEM. Great JIT reduces cost for the entire supply chain. Require your suppliers to do JIT correctly and enthusiastically and you will keep your OEMs for life because you have done your part to move their costs the farthest down the supply chain. In an industry where every penny saved is multiplied by 15 million (cars), the more the whole chain is involved the greater the savings for everyone.

MRO is still another example. For many businesses, MRO represents as much as 50 percent of their operating cost. Properly designed and executed, e-procurement MRO can deliver an ROI in excess of 300 percent in the first two to three years. If you are knee deep in suppliers, you can hold 'electronic auctions' where your suppliers keep dropping their prices until you, the customer, decide when and how much to buy. This is the exception to most e-business applications but proves the point; using the eCommerce to do better business, not just more business, is the answer. Think costs, think time, think collaboration, and celebrate success.

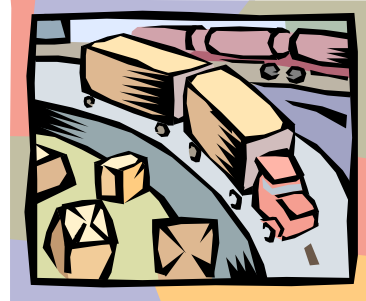
Their Time is Your Time

While most of the ways to find supplier time are universal across all businesses, there are some uses of time that are more specific to certain industries. Thus, one of the secrets to saving time, particularly on the supplier side, is to identify the type of time that has the greatest impact on your

business. If you can discover the time to which your business marches, the 'metronome' of your business, then you will be even more successful in your use of time.

There are thousands of businesses scattered across hundreds of industries. Finding the one that matches your business may take a little time. Use the following as a guide to defining your special form of supplier time.

Automotive: Just-In-Time is the mantra of the automotive industry. It works both ways. Your OEM gives you designs, forecasts, and delivery orders just-in-time. You pass the information on to your suppliers. They deliver raw materials, component part or sub-assemblies, just-in-time. You receive them, add your value, and deliver your finished goods to the OEM. All tiers are synchronized with each other. They are all collaborating. At least that is the way it is supposed to be.



Banking and Financial: The time value of money rules in banking and financial. Pay directly, pay quickly, watch the interest, and watch the cash flow. With e-Time, float is no longer a given. Float is now neutral and manageable. Float is now negotiable.

Government: Government equals bureaucracy equals paper work. There are so many opportunities to substitute electrons for paper, it boggles the mind. The more electronic documents you can deal with, the more business you will do with the government.

Grocery: Food spoils. It is time-sensitive. Manage the food supply chain well and you will manage your costs. Keep what the consumers want on the shelves but don't keep it too long. Customers also shop for the lowest price so mind your promotions and deals as well. Become more electronically connected. If you are in grocery and fast consumer packaged goods, learn as much as you can about Effective Consumer Response (ECR)

Healthcare: This is the most complex industry in the United States. Administratively, it is also the most inefficient. Twenty percent of all healthcare cost goes toward processing claims and associated paperwork, a staggering \$200 billion dollars each year. Too many payers, too many insurers, too many providers, and too many cooks spoiling the broth. It takes six months on average to process a claim and receive a payment. The key to success in healthcare is to collaborate by doing anything and everything possible to shorten the treatment-to-payment cycle.

Insurance: This industry is recovering from the paper and information binge of the mainframe computer era. They are using EDI and eCommerce to slim down the administrative and sales processes. The Allstate Insurance Company recently announced their planned use of the Internet and direct customer access/self-service to replace 4000 sales representatives. They are leading this industry in the elimination of mindless time.

Manufacturing: It is not what you make, but how fast you can make it that counts today. Fast and flexible is the new mantra. Leave mass production runs to the offshore manufacturers where the economies of cheap labor offset distribution cost and time-to-market. They only represent 10 percent of the market. Small and medium manufacturers comprise the other 90 percent. They are the next frontier for the collaborative supply chain. Rapid prototyping, quick set-up and fast change over, mass customization, and the order of one are just a few of the time technologies of the future.

Retail: Styles change. Fads come and go. Inventory is time-sensitive. Inventory-turns is the name of the game. Avoid stock-outs and keep what the consumers want on the shelves. But don't keep it too long. Yesterday's hot product is today's white elephant. Stay connected to the consumer

and make it easy for them to do business. As soon as a product comes off the shelf, have a replacement ready to take its place, not from the back room or a warehouse, but directly from the manufacturer. In retail, this is known as Quick Response (QR) and CPFR.

Did you find your time? Good, now take the supplier time point-of-view and you use it to your best advantage. This is where you have the most control. This is where you will gain the most advantage. Get them to hold the inventory, force them to use their time to come to you for the information they need, and make sure they let you know when things are about to go wrong before they go wrong. Be friendly, be firm, and collaborate, but make sure your systems keep the ball in their court as you do your best to make their time your time.

Chapter Fourteen: Collaborative Time

A product manager from IBM once asked me if I knew of a good supply chain management (SCM) software package for the middle market. My response was that there wasn't any – nor could there be any. I explained to him that there were packages that could do parts, but not do all of it. I added that SCM could be described as the transportation of information and like conventional transportation which has trains, planes, car, truck and boats, there is no 'one size fits all' solution.

As so it is with the most important time of all, collaborative time. More of a concept than an actual time, collaborative time is the aggregate of the times we have discussed so far. Collaborative is the patchwork quilt of the collaborative supply chain that makes the supply chain work. So, if you only have time to read or remember one chapter - this is the one. This is the summary of the other chapters that define the different kinds of time.

Elapsed Time (Chapter Three)

The most prevalent of the collaborative times, elapsed time is the time spent waiting for something to happen. According to Michael Hammer, up to 99% of time spent in a manufacturing process can be classified as elapsed time.

Real Time (Chapter Four)

Real time is the most common form of elapsed time. Real time is elapsed time that occurs as an action or activity as it takes place. Real time is used to measure how long it takes to perform a function or how long it takes to exchange information between functions. It is the easiest to identify and usually the easiest to reduce or eliminate.

Dynamic Time (Chapter Five)

This is the hidden form of elapsed time that is the result of the dynamic effects of the supply chain. It is harder to measure and even harder to control. A one-week delay in the receipt of materials, for example, may result in a two-week delay in production. Uncontrolled dynamic time equals an uncontrolled business.

Mindless Time (Chapter Six)

Mindless time is time that should not even be there in the first place. It is busywork. It is mind-numbing, error producing data entry. It is the time humans spend doing repetitive task that should be done by technology.

Murphy's Time (Chapter Seven)

It is the elapsed time consumed by the timeline each time Murphy's Law is pressed into service. It is the time it takes to discover the problem. It is the time it takes to fix the problem. It is the time wasted on the wrong activity or the inactivity as a result of the problem. Added up, it is measured not in seconds and minutes, but in hours, days, weeks and sometimes months. We know you can't eliminate it, but you can manage it.

Time as a Matrix (Chapter Eight)

Time is no longer only linear. When life and business were much simpler, time was used to measure a series of consecutive events or steps in a single direction. Assemble the materials, make the product, and place it on the shelf to be sold. All nice and orderly, all in a straight line. That was then. Now time has two dimensions -- linear and matrix. Matrix time is much faster so if you are marching only to linear time, you are falling behind,

Time as Service (Chapter Nine)

Service takes time and therefore adds to the expense of selling a product. As products become more like commodities, it is the service rendered that is often the differentiator. In many cases, the services take more time than it takes to make the product. Time as a service therefore becomes not only of greater value, but also of greater cost. If well conceived and managed, it can make the difference. If not, it can put you out of business.

e-Time (Chapter Ten)

Internet time, electronic business time, or eCommerce time, it is all e-Time. In the age of demand at the speed of a whim, it is 24/7 time. It is 21st century time. It is the time that has changed time.

Quality Time (Chapter Eleven)

Zero defects time. Quality is Job #1 time. There is never enough time to do it right the first time but always enough time to do it right the second, third, or fourth time. We have heard these slogans before and the reason is quite simple. Poor quality translates into extra time, quality time. Quality time is the time we spend adjusting, correcting, returning, or discarding because of poor quality. Quality time is time that left unmanaged can be quite extensive and expensive.

Consumer Time and Supplier Time (Chapters Twelve and Thirteen)

This is time with a user point-of-view. Your time is your customer's time and your supplier's time is your time. Sounds like doubletalk but it is the truth. What we do as part of the collaborative supply chain affects the other players. This means that to reduce our time, we have to look at time through the eyes of our customers and suppliers and collaborate to reduce everybody's time. You win... they win...we all win.

So there you have it, Collaboration Time. Understand it and you have made a step in the right direction. Conquer it and you have won the race.

Chapter Fifteen: Follow the Time; Get the Money

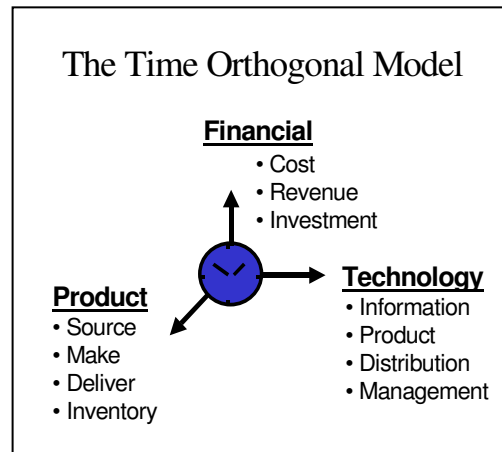
Any law enforcement official will tell you the best way to investigate organized crime is to follow the money. The same process works for finding and eliminating time from your supply chain. Follow the time, and it will lead you to the money (and the opportunities to save it). The steps are simple:

- 1) Use the Time Orthogonal Model (TOM) to pinpoint the business attributes of each link, function, or entity in the supply chain;
- 2) Identify the type(s) of time that are involved; and
- 3) Apply W⁵H+M to deliver a resolution.

Step One -- The Time Orthogonal Model (TOM)

Removing time from the supply chain requires drilling down to the lowest level of detail for each link, function, or entity of the supply chain. The devil is in the details. The best way to achieve decent results is to use a standardized approach, such as the Time Orthogonal Model (TOM).

The TOM uses the x, y, and z-axes of a three-dimensional model to show the dependencies of money, product, and technology, the three primary aspects of any business. As one aspect of an event occurs or is acted upon in the course of the business process, there is a corresponding reaction by one or both of the other two aspects. Do something to the x-axis and there is a corresponding response by the y or z-axis.



- The vertical or y-axis represents the financial aspects of a business event:
 - The cost of the event.
 - The revenue resulting from the event.
 - The capital investment (if any) underwriting the event.
- The oblique or z-axis represents the product or service produced or delivered by a business;
 - What it takes to source the materials and resources for each event;
 - What it takes to make the final product or service delivered by that event;
 - What it takes to deliver the product or service to the next step in the process; and
 - The inventory involved in the event.
- The horizontal or x axis represents;
 - The technology used by the y and z axes;
 - Information technology, product development technology, distribution technology; and financial and management systems technology.

Apply the TOM to each event in the supply chain process. The model must 'fit'. If the results are multiple or ambiguous, then the event is probably not sufficiently decomposed. If the model cannot be applied, then the event is improperly defined. When applied, TOM will tell you what people or inventory are involved.

Step Two -- What (Kind Of) Time Is It?

You have found the point of application. Now you have to identify what kind(s) of time are involved in order to determine the best way to affect a reduction or total elimination.

- Real Time and Murphy's Time usually involve direct solutions using readily available technology.
- Dynamic Time is much more difficult. Since the result is not usually at the point of application, solutions in this area require re-engineering of the process and greater involvement with trading partners.
- Mindless Time is somewhere in between and requires a mix of technology and changes in the business process.

Step Three -- W⁵H+M

You have found it and you know what it looks like. Now you have to do something about it. The process I prefer is based on the five Ws and an H that we used in high school writing class and the addition of a way to measure the results.

- What is the event about, what is happening, and what are the intended results?
- Where is the event in the overall process? Is it in the right place?
- Who is involved in the event? Who are the actors, stakeholders, and direct participants?
- When does the event occur? Is it in the right order?
- Why does the event exist? Is it needed? Can it be eliminated or replaced?
- How is the event performed?
- Metrics. How is the event measured? If it can't be measured, it is not an event.

Chapter Sixteen: Workflow

If you have been hanging in there and read Chapters one through fifteen, you should have acquired 'a feel' for the different kinds of time and how to find and eliminate them. We now need to focus on doing a better job of managing what time remains. Since the management of time, in one way or another involves your company information, the easiest place to start is at home with the management of your own internal information.

Managing company information is like managing a three-ring circus. There is a lot of information, it comes in all sizes and shapes, and it is gathered from diverse sources and locations. In Ring No. 1 we have the information of the past. It is the home of data mining, analytics, and business intelligence. In Ring No. 2 we have information for the present – the day-to-day operations. Ring No. 2 is the home of eCommerce and ERP and the relationship with our suppliers and customers. And in Ring No. 3 we have information for the future. This is the home of collaboration and advanced planning systems (APS), where forecast sales anticipate the 'what if' and the unexpected.



Since information comes from multiple sources, it has to be gathered and coordinated before it can be put to use. Thus the task at hand is to make sure the right information is available at the right time, on time, and without wasting a lot of time, particularly mindless time. This is the job of the enterprise information ringmaster, a.k.a. the enterprise information *workflow* management system.

Workflow is a rather broad term. It is whatever a company wants it to be -- a single program or a collection of programs. Workflow can do a single task, operate at the department level, or be used to manage the entire corporation. Here are some characteristics of a good workflow implementation.

Good Housekeeping. A place for everything and everything in its place. Intuitive and unambiguous access to any and all information that is accurate and up-to-date, easy to find, easy to maintain, anytime, and all the time.

Intelligent Workflow. The automation of a process with the intent to minimize data entry and maximize timely adjustments and approvals. No re-keying of data. Enter it once and let The Time Machine populate it as needed throughout the entire process.

Secret Agents. Processes and routines that alert, notify, remind, warn, and otherwise provide proactive notification of an event that has occurred, will be occurring, or should have occurred. Secret Agents are also the best way to manage Murphy's Time.

Customer Self-Service. Client access to information in real time that provides a sense of control and timely notification of things good and bad. Risk management placed directly into the hands of those who have the most to lose.

Corporate Self-Discipline. Frameworks and templates that organize thought and minimize error or forgetfulness. A properly designed workflow thread will only permit correct use.

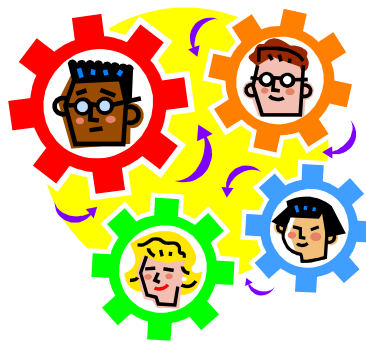
Paperless Business. All information needed to operate a business can be designed into a workflow. No paper, no duplicate data entry. No duplicate data entry, no mistakes.

Time Management. Humans are a major part of any business process. They need as much help as the business process itself. A good workflow system helps with time management as much as it helps manage time.

Collaboration. Last, but not least, is collaboration. Do everything once, at once, at the same time. Bring the players together, discuss and decide. Don't play the pass-the-buck game where the object is to keep the 'paperwork' in someone else's basket. Get on with it and get it over. Think time and team at the same time. Make your workflow your collaboration manager!

Workflow and Timeless Business.

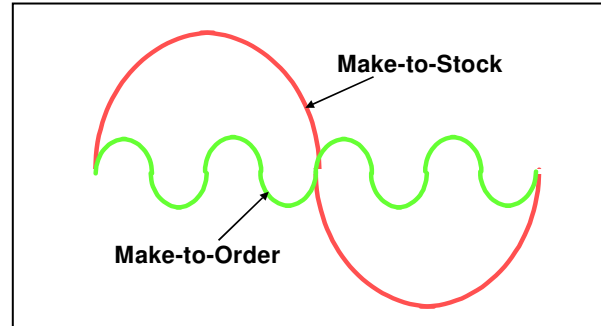
Do all of the above and you will have a timeless business. Most of us think that a paperless business is the best business. It is, but only if it saves time. It is time that costs money, the time to generate, process, and deliver the paper that counts, not the cost of the paper itself. So think time and paper, but direct most of your attention to time. Manage your information circus, your information storage, your information workflow, and you manage your business. Most of us do it in bits and pieces. Few of us do it all at once, at the enterprise level, with a collaborative enterprise information system. This is why robust workflow should be your business' next best friend. Once you have it you will wonder how you ever operated without it.



Chapter Seventeen: Process and the Sweet Spot

Having addressed internal information management, we can now venture outside of the box and into the world of the interoperable supply chain.

It is my own opinion that we can no longer make our function-based businesses bigger and faster in order to keep up with the supply chain. We are at the practical limit and must do something radically different. The function-based, make-to-stock way of the past is getting to be too expensive. The time and cost of keeping large inventories in stock to be used to make something, or waiting for someone to buy (area under the large sine curve), is no longer affordable. We must shift our thinking from *function* to *process*.

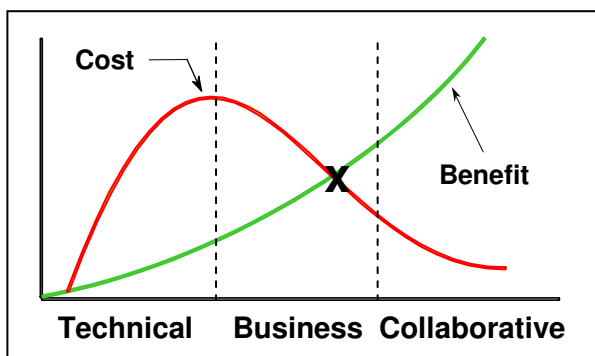


Make-to-order is the way of the future. We should only be making what is needed at the moment of need. The smaller the production run (and therefore the greater number of turns or cycles), the less time and money we tie-up in our operation. Although there are practical limits – you can't economically make one gallon of paint -- the ultimate goal is the order-of-one. To get there we must shift from function-based to process-based thinking, from mass production to mass customization, from large production runs where the cycles have high amplitude to ones that approach a flat line. The flatter the line, the less area underneath, hence the least amount of waste.

So how do we get there? Eliminate time. How do we do it? Use collaborative business technology. Thus, the goal of every company installing business technology should be to make sure it is useful and delivers a good return on their investment, which means turning that investment into a profit. Unfortunately, most implementations of technology do the opposite. They only increase in time and cost.

The ultimate goal of applied technology is to eliminate costs. To do this, however, you have to think about your entire business process as a process, not just *one function at a time*. Applying technology on a single part (function) without considering the other parts of the process, will only deliver limited results.

For example, if you install an EDI order entry system to keep a few of your best customers happy, then you have only increased your costs and doubled your time. You now have two systems, the new one and the old one. You are stuck in the technical zone. If you integrate your EDI with your



other business systems such as accounting or shipping, you may start saving some time and money. The more systems you involve, the more you involve the business process and the closer you move toward the business zone and the sweet spot. Eventually you will reach a point where your benefits start to exceed your costs -- the ROI sweet spot..

You are now in the business process zone and are moving passed the ROI sweet spot toward profitability. But you can't stop there. You have to keep going. The brass ring is in the

collaborative zone where you use collaborative technologies to change the overall way you do business. The more you collaborate, the greater the benefit. It is in the collaborative zone where time really counts. It is here where you extend your collaboration to include your customers and your suppliers and eventually your customer's customers and your supplier's suppliers. It is here that the concepts of time and process and collaboration accelerate as they come together.

Eventually your business process will become your entire supply chain. It won't happen on the first day, but it will happen. So how do you 'stay alive' long enough to get there? The same way you eat an elephant -- one bite at a time. You will apply collaborative supply chain technology one bite at a time but without forgetting that you are eating an elephant. You have to keep the whole process in mind the whole time or you will come up short. You will have to work with the other links in the supply chain as you tackle time and ROI. You will have to work together, collaboratively.

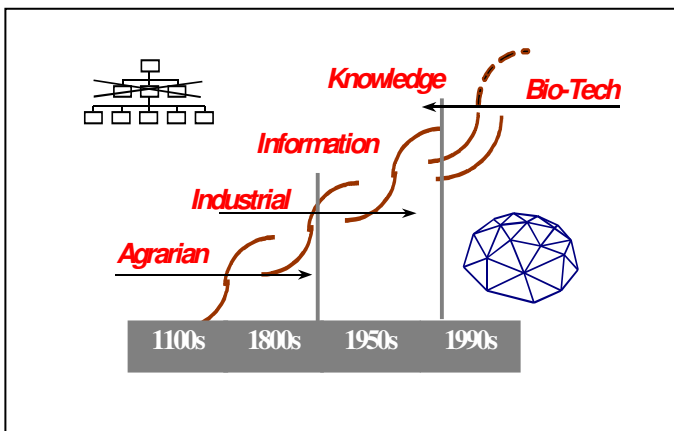
Chapter Eighteen: The Time is Now

"The future ain't what it used to be." ...Yogi Berra

One way to see just how different is to compare the future with the past. With help from Tofler, Naisbet, and two other guys, Stan Davis and Bill Davidson who wrote *20/20 Vision*, I have put together my view of where we have been and where we are going.

Let's say that the concept of 'a business' began sometime during the Agrarian Age, progressed to the Industrial Age, then to the Information Age, and is now moving into the Knowledge Age and the 21st century. Although there are many attributes that describe the characteristics of each age, there are two of significance that I find rather fascinating. The first has to do with the management style and the second has to do with a basic change in the business culture.

From a technology point of view, the transition from age to age took a relatively short amount of time. The mechanization of farming, for instance, took place almost overnight. From a management style point of view, the transition took much longer. For example, it wasn't until the middle of the Industrial Age, about the time of the Civil War, when the railroads and industrial complexes in the north came to life, that the organizational pyramid management style was put into place. This form of management stayed with us until the recession of the late 1980s, well into the Information Age.



It was thought the recession of the 1980s was just that, a recession, but it wasn't. What was actually happening was that the management style of the Information Age was finally being formed. The workers, who were laid off, particularly the white collars of middle management, were not being re-hired. They were being replaced (forever) by personal computers, e-mail, and cellular telephones -- the technologies of time. The management style of the Information Age began to look more like a geodesic dome than an organizational pyramid.

The restructuring of the workplace in the Knowledge Age will be in two parts, one technical and one cultural. We have already discussed the organization changes that are the result of time technologies. The second part will be changes that go to the very core of our business culture. These changes are more subtle and more significant. The extent to which they will define the next millennium is unknown.

During the Agrarian Age, business opportunities were pretty much limited to one's heritage. If your father was a blacksmith then you would be a blacksmith. Your success was based on how well the skills were passed down from generation to generation. In others words, success was based on what you already knew and how you improved upon it. The same phenomena occurred in the Industrial Age and into the Information Age. Except for automobiles in the mid-1970's, the products manufactured today were better than those manufactured last week, last month, or last year. Again, success was based on what you already knew and how you improved upon it.

This trend is quietly (and quickly) changing as the Information Age gives way to the Knowledge Age. We are now 40 years into biotechnology and DNA. DNA is telling us that what we thought we knew about our bodies was wrong. We are having to start all over again. Since we don't know what we don't know, the Knowledge Age line is 'dotted' into the future. This means that our success in the future is *not* going to be based on what we already know and how we deal with it, but *on what we don't know yet and how we respond to it!* This is a major change, perhaps the most significant in the way we live, think, and function since the advent of the Industrial Age.

The Future is Now

To be successful in the next millennium, a business will have to be fast, flexible, open and empowered. To do this it will have to become more agile, flexible, and dynamic.

A business will have to shed its stand-alone identity – it can no longer be the 'center of its own universe.' It must become part of a much larger one that extends around the world. It will learn how to interoperate with its customers and suppliers as it strives to meet a wider variety of continuously changing requirements and business needs.

A business will have to become much more efficient in response to competitive pressures for global markets. It will have to learn all about time.

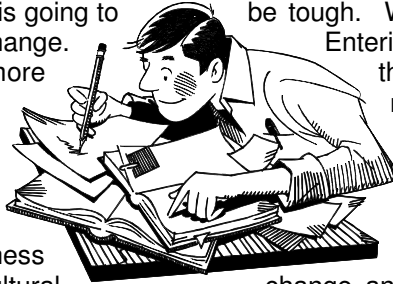
For most of us, however, this is not happening fast enough. The problem is that our old way of thinking keeps getting in the way. We don't want to change our stripes. But if we don't master time some time soon, we are sure to run out of it.

In the words of Lou Pritchett from Procter & Gamble, "When external change is faster than internal change, disaster is imminent!"

Chapter Nineteen: Doing It Right the First Time

You now know about business technology, four kinds of elapsed time, The Time Machine, the difference between function-based and process-based, make-to-stock and make-to-order, and the need to get to the right of the sweet spot. You also know that the clock is running and that time is running out. Now comes the really hard part. Doing something about it.

Breaking old habits is never easy. Overcoming our love affair with function, code, paper, and being the center of our own universe is going to be tough. We have to change. You have to change. Everybody has to change. Entering the 21st century in a meaningful way will mean more than improving the way we manage time and exchange data. It will mean changing the very core of the business process.



Real change means re-business. It means business *value* of the business it. It means learning about cultural change and using change management. It means having to revitalize and learn how to look at things as we have never seen them before. It means doing all of this up front so we can get it right, the first time.

engineering the way we run our redefining the *content, intent* and process and how best to deliver

Reversing Our Thinking

Several years ago I had the opportunity to discuss the dilemma of being chained to legacy technology and systems with an industrial sociologist from Silicon Valley in California. “Why are we in this mess?” I asked. “Because we have always tried (without much success) to make humans fit the latest technology,” he answered. As he went on to explain, I was beginning to get the picture.

For thousands of years we have been trying to change the way humans think and operate. In the beginning, for example, we moved near the water – the original transportation ‘technology.’ By the end of the 19th century, we moved to the railroads – the latest technology of that time. One hundred years later, the interstate highway system came along and we moved again. The same pattern has been repeated for computer technology. We designed our information systems around the 80-character, fixed length record because Tom Watson’s machine processing key punch cards had 80 holes. In the 1980s, we moved to the spreadsheet because of the random access memory chip. And so it seems to always be the case. If there is a new technology, like lemmings, we chase after it.

As we enter the 21st century, we have, perhaps for the first time, the opportunity to reverse the paradigm and make technology fit our behavior. In other words, fit it the way we do business, not the other way around. But how *do* we do business you ask? The answer is: deliver *business value* through the proper use of *business functions*.

Business Value

Just what exactly is business value? Business value is the ‘verb’ of business – buy, make, sell, pack, ship, etc. It is what we do and why we do it.

Business value is the act, the action, and the result. It is the beginning and the end. We want to buy more quickly, make more efficiently, pack more accurately, sell more effectively, and ship more on time. We do this so we can save more time and make more money. In other words, we want to provide value and receive value.

The need for business value has prompted the creation of the Supply Chain Council, the first international standards body to focus on the business process and not the communications technology. The Council, started just three years ago, has created the Supply Chain Operations Reference (SCOR) model as the methodology for delivering better business communications and business value up and down the supply chain. In workflow and business modeling terms, the business process requirements are organized in terms of source, make and deliver, 'verbs' in their own right. To provide value, the SCOR model 'asks' questions such as: How does your supplier receive notification of your purchasing requirements? How does your customer expect to take delivery? Who will be responsible for the inventory? And so forth.

So, if you want to spend less time learning how to save time, business value is where you start.

Business Function

Business function is the 'noun' that delivers business value. It is the business function that connects the different links in the supply chain. Order entry, for example, is the business function that enables a buyer to make an order to buy something from a supplier. A purchase order, the 'noun' that is the result of the ordering process, becomes the vehicle of that function. Business function is *how* we do it.

There are a variety of business functions that are needed to provide business value up and down the supply chain. Business functions come in many sizes and shapes that range from simple order entry to the more complex Vendor Managed Inventory (VMI). A list of the most common business functions can be found in Appendix A.

Revitalization and Cultural Change

Describing business values and business functions is one thing, doing something about them is another. As we said at the beginning of this chapter, change does not come easily. Therefore, if we are to benefit from these concepts in any reasonable amount of time, then we have to understand change and change management. The better we understand how to enable change, the sooner we reap the benefit. Stated another way, if we are going to take full advantage of new technology, we better learn how to teach old dogs new tricks.

If we are like most organizations, we start the process of installing technology or designing a new way of doing business. We think this is the beginning but it is actually 'step two'. We are anxious to get on with the project and don't do the proper planning or lay the proper groundwork. To make matters worse, we don't revitalize our thought process and get a fresh view of the world. The result of our impatience is usually unmet expectations, if not outright failure. We end up either starting over or throwing in the towel.

Where then should we start? The answer is with revitalization, the first step to achieving a genuine business transformation. What, then, is revitalization? Perhaps this one last story will give you the answer. It is the story about Tony's Steakhouse. Even though Tony's restaurant had been a success for many years, business was starting to fall off. One day, while pondering the situation, Tony noticed that there were three other steakhouses in his part of town. "The market is saturated," he thought, "while at the same time it is shifting away from red meat and toward more healthful food." So Tony decided to re-engineer his establishment into a vegetarian restaurant.

Tony started with the technology. He went to the kitchen, ripped out the deep fat fryers, and installed steamers. Then he tackled the business systems. He stamped red hearts all over his menus and counted the triglycerides. The marketing came last as he replaced the steer's head on the wall with a basket full of grain. He opened Tony's Tofu Temple. Business was great for a while but before long he was back where he started.

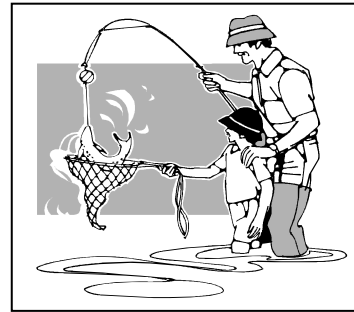
What went wrong? Tony read the right books and followed the procedures, yet he still failed. The problem was that even though he served a vegetarian menu, he still had a steakhouse. He had designed a vegetarian restaurant through the eyes of a meat eater. He did not either become a vegetarian himself or hire one to show him the way. In other words, he did not revitalize.

Revitalization is the art of unlearning the old to make way for the new. It is the art of using the new to create the new. After all, if you didn't use DOS to learn Windows, why would you use the old culture to bring in the new? Thus, we have the reason why most re-engineering misses the mark. Companies wipe the slate clean and start over again but they still retain the same old perspective. If they had taken time to revitalize, then they would have done it right the first time.

Learning to Fish

We have all heard the biblical phrase 'give a man a fish and he eats for a day, teach him how to fish, and he eats forever.' And so it is with changing your business. You can hire someone to come in and do it for you or learn how to do it yourself. Either option has its merits and its drawbacks.

'Fishing-for-you' can be described as the 'training' approach where consultants, armed with standard methodologies and templates, address the *what* and the *how* of a business project. While this approach delivers best practices, has immediate short-term results, and provides lower risk, it assumes a static condition and in the long run it is not necessarily less expensive or more quickly implemented than the 'learning-to-fish' approach. There are two reasons for this. The first is because the typical business process is not static but quite dynamic. It is constantly changing in order to respond to the continuous stream of changes in the market, customer demands, and supplier relationships. The second is because there are practical limits on how much an outside consultant can learn about your business. As a consequence, those who are fishing-for-you can only remove known barriers and fix known problems. It wins the battle, but not necessarily the war.



'Learning-to-fish' could be described as the 'educational' approach where you learn the *why* in addition to the *what* and the *how*. (You may not realize it, but you have been doing a little learning-to-fish just by reading this book.) While this approach takes greater effort up front, it provides greater payback down the road. The advantage to this approach is that internal staff, who really know the business, can revitalize and learn why and how to identify and fix problems and barriers now *and in the future* as they are discovered when they are discovered. This is what continuous improvement is all about. This is what revitalization makes possible. This is also the best way to do it right the first time.

Chapter Twenty: The Wrong Time, The Wrong Way

We talked a lot about time and how it can be the single key to doing business, better. So, before you go off and redo your business, here is one last piece of advice. Be sure you use the right time the right way, not the wrong time the wrong way. It is just as easy to do it the wrong way as it is to do it the right way. Here is what I mean.

Remember the recession of the 1980s and the massive layoffs? At least we thought it was a recession but we learned later that it was something else. The people who were being let go were not being rehired when business returned to normal. Their jobs were permanently eliminated. We were starting to define the management style for the Information Age. For the first time it was not just the hourly workers that were taking the hits. They had been joined by the front office. The technology of time (computers, e-mail, etc.) was making it possible to flatten the management structure by eliminating middle managers, administrators, and even secretaries. Everybody could now do his or her own work. Look at all the time and money that could be saved! Look at the increase in efficiency! Or so we thought.

The reality is that we have saved very little time. As for increased efficiency, we only have to look at our daily business and personal lives to see just how inefficient we have become. By eliminating the folks in the middle, we have traded in guidance and quality control for multiprocessing, longer hours, higher stress, and burnout. Our performance reflects the quote at the front of this book. How many times do we say to ourselves in frustration, "There has to be a better way," or "Can't anyone get anything right anymore?"

There is a right way and a wrong way and that is where we made our mistake. We chose the wrong way to 'improve' our business. We acted first and thought second. We turned human assets into commodities. We eliminated the jobs before we assessed the tasks. We reduced head count (to instantly improve the bottom line), but we didn't change any of the systems or processes. When we made these decisions, we only looked at the individuals and not the tasks they were performing. We forgot to tell the machines we were operating, the books we were keeping, the data we were entering, and the orders we were shipping that they had to be done with fewer hands. The result was fewer people doing more work, less efficiently. As a consequence, employee loyalty took a nosedive, quality went down, and customer complaints went up.

We repeated the process at the turn of the century, only in a different way. The rush to join the e-commerce revolution and the dot.coms once again proved there was a right way and a wrong way. This time we ignored the back-end processes. We overbuilt in anticipation of unrealistic growth. We ignored the back end altogether and how to use the same e-business technologies to reduce time and increase efficiency. The majority, the 'build it and they will come' companies, are no longer in business. Those few that concentrated on the back end efficiencies and the relentless battle to reduce time survived and are alive and well.

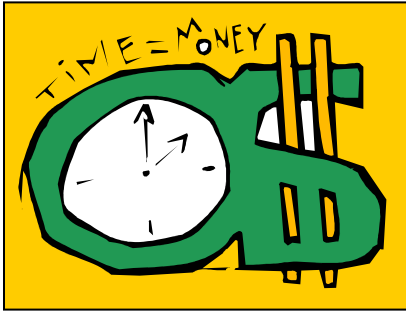
Going into the new century we are still struggling with this issue. Although the time technologies have been with us for over 25 years, we have little more than scratched the surface. We are doing more EDI and bar-coding, we have instituted work flow, and we have embraced the Internet. But installing new time saving systems and making meaningful improvements to remove time from the supply chain is still taking much too long.

Are we really getting anywhere? I think so, finally. We have learned some hard lessons from the unmet expectations of the past ten years. We are beginning to look at the business process *before* we jump in with the technology. We are learning more about time. Executive management no

longer thinks they have all the answers. They have learned that saving time is not a spectator sport where everybody sits in the stands and watches the IT department on the playing field trying to make it all happen. Management is starting to respect people, seek their ideas, and value their input. They have learned that when it comes to time, saving it is an all hands event.

So do it the right way! Go back to the basics. Learn all about time before you try to do anything about it. This is the message of this chapter, of all twenty-one chapters. There is a right way and wrong way and a right time and a wrong time. Know the difference and you will win the race against time. Understand all about time and you will do it right the first time.

Chapter Twenty-one: PSC Knows All About Time



Do you remember the Federal Express TV commercial where the harried manager answers a rapid fire stream of non-stop telephone calls with “I can do that, I can do that” and then looks at the camera and says ‘How am I going to do that?’ Like the FedEx manager, you too have a time problem. How are you going to ‘do that’? Are you going to do it yourself or are you going to get some help?

PSC is in the business to help save time. We may not be experts in what our clients do or how they do it, but we are experts in helping them do what they do in the least amount of time and with the least waste of time. We know about technology. We know all about time. And we know how to do it right the first time.

To wrap up this book and to help jog your memory we have prepared this summary sheet on our understanding of time.

Business Technology

PSC understands the difference between information technology and business technology. We provide our clients with both. We take time to understand the business value and then apply the right business technology.

Elapsed Time

PSC knows business. We understand manufacturing systems and the supply chain. Many of our professionals have had experience in the trenches. We also know about elapsed time. We know firsthand how to waste time and how to save time. This level of expertise enables us to really understand our clients’ business and business processes and how to achieve real results.

Real Time

We know the story. You are too busy to take the time to manage your elapsed time. That is why we are in business. You can use a little of our time to save a lot of your real time.

Dynamic Time

It takes time and effort to keep up-to-date on the latest in time-saving technologies such as dynamic time. PSC participates in organizations like the Supply Chain Council and the X12 EDI Standards organizations that are making a science of saving time. We think our time is well spent because the more time we spend learning about time the better we are able to help our clients save time. Our time becomes their time.

Mindless Time

PSC knows all about Marvin-the-Matcher. At one time, we had more than one of our own. In our business mindless time is non-billable time, which means it is overhead. We had a lot of overhead. But that was before we developed new ways to control our mindless time. Our clients are now using them to reduce their mindless time and save money -- just like we do.

Murphy’s Time

PSC knows all about Murphy’s Law. We know that although you can’t eliminate it, you can manage it. Our EIS system lets us know when we don’t do things the right way at the right time. It lets us know right away so we waste as little of Murphy’s time as possible.

Time as a Matrix

PSC knows about time as a matrix. Matrix time is how we have to run our business. Scheduling resources is the bread and butter of a consultant firm so matching the right resources with the right engagement at the right time is essential to client satisfaction. As our clients move to matrix time so does their need for 'matrix' support. One requires the other. This is what time as a matrix is all about.

Time as Service

PSC is in the service business. Delivering services on time is our bread and butter. We also know that time is of the essence when it comes to e-Commerce and e-Business. Service, e-Commerce, and e-Business are all reasons why we created EIS -- The Time Machine

e-Time

Not only does PSC know about e-Time, but PSC professionals are also helping to create more of it. We are members of the Supply-Chain Council and active participants on the PLAN Committee working together with other consultants, software suppliers, and industry practitioners to take more and more time out of the supply chain.

Quality Time

The quality is the time we lose because of poor quality. The measurement is just the opposite. The less time spent, the better. Like the game of golf, the lowest score wins. Like any business, PSC struggles with quality time. This is why we know that there is never enough time to do it right the first time but always enough time to do it right the second, third, or fourth time.

Consumer Time and Supplier Time

PSC knows the difference between customers, consumers, and suppliers. We also know the difference between B2B and B2C. To assist in determining how the difference affects a business, we have developed Perception Mapping, one of the business strategy features of our Re-Vitalization program.

Collaborative Time

PSC knows that the most important time of all is collaborative time. More of a concept than an actual time, collaborative time is the patchwork quilt of times that make the supply chain work. So, if you only have time to read or remember one chapter, this is the one. This is the summary of the other chapters that define the different kinds of time.

Follow the Time: Get the Money

PSC knows how to follow the time and to get the money. We created the Time Orthogonal Model just for that purpose. We have been using it to guide our thinking for nearly ten years. It has withstood the test of time.

Workflow - The Newest Time Management Tool

PSC knows a lot about workflow. We were one of the 12 original alpha sites for Lotus Notes/Domino for the AS/400. Not only do we sell and install Lotus for our clients, we also use it ourselves. It is the foundation of our PMI system. We use it to manage our projects, to manage our resources, to manage our sales, to manage just about everything. We have no paper. We also provide our clients with direct access to information about their projects. This saves us time, saves them time, and gives them the ability to track their projects on a day-by-day or minute-by-minute basis. PMI is how we run our business. It is how you can run your business.

Inventory Time: The Elephant and the Sweet Spot

PSC hears about inventory time every day. It is our client's most often mentioned concern. When we hear about inventory, we know to listen carefully because inventory is more often the symptom

than the problem. We know that inventory time is created by other time failures in the process, which means that to save inventory we have to look at the big picture. This is also why inventory time is the easiest way to measure ROI.

The Time is Now

PSC knows that to be successful in the next millennium, a business will have to be fast, flexible, open and empowered. To do this it will have to become more agile, flexible, and dynamic. A business will have to shed its stand-alone identity – it can no longer be the ‘center of its own universe.’ It must become part of a much larger one that extends around the world. It will learn how to interoperate technically and collaborate on business issues with its customers and suppliers as it strives to meet a wider variety of continuously changing requirements and business needs. A business will have to become much more efficient in response to competitive pressures for global markets. It will have to learn all about time -- now.

Doing it Right the First Time

PSC knows that breaking old habits is never easy. Overcoming our love affair with function, code, paper, and being the center of our own universe is going to be tough. We have to change. You have to change. Everybody has to change. Moving forward in the 21st century in a meaningful way will mean more than improving the way we manage time and exchange data. It will mean changing the very core of the business process. Real change means re-engineering the way we run our business. It means redefining the *content*, *intent* and business *value* of the business process and how best to deliver it. It means learning about cultural change and using change management. It means having to revitalize and learn how to look at things as we have never seen them before. It means doing all of this up front so we can get it right, the first time.

The Wrong Time, the Wrong Way

PSC knows about this kind of time as well. We are not immune from learning lessons the hard way. But we learned early and have kept our mistakes to a minimum. With help from our own Strategy/Planning programs, we now do the right things the right way. We now grow into our systems instead of playing catch-up. Strategy/Planning can do the same for your business – with the right time, the right way.

Yes, PSC knows all about time!

About PSC

PSC Group, LLC. based in Schaumburg, IL., is an information-technology and professional services consulting firm that focuses on helping companies withstand the challenges of change and to solve business-infrastructure problems using long-term solutions that use only proven technologies. Formed in 1990, PSC specializes in the manufacturing, distribution, financial services, and healthcare industries for mid-market enterprises. To provide their clients with access to current product information, technical support, advanced training programs and future trends, PSC is a partner with many of the IT industry's leading firms and software providers. The firm also maintains active membership in key organizations and standards bodies that develop new processes and business models that boost productivity and return on investment.

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It's all in the way we listen!

Appendix A: Business Functions

The following is a listing of acronyms, abbreviations, concepts and terms that describe the business functions and processes that are part of the electronic world.

Term	Definition
Activity-Based Costing	An accounting method that costs products by the production activities performed during actual manufacturing
ASN -- Advanced Shipment Notice	An EDI message sent from the shipper to the receiver prior to the departure of the shipment from the shipper's facility. Includes complete information about the shipment and its contents. In today's environment, this message is more often an "as shipped notice" sent after the departure of the shipment.
ATP -- Available to Promise	A supply chain management term used by customers to determine the manufacturer or distribution system availability of a product in certain quantities by certain dates. Similar to CTP
Brand Management	An accounting method that costs products by the brand name.
Catch Weight	Method of managing product (inventory) where source weight is different than finished weight
Consigned Inventory	Under the consigned inventory concept, the supplier retains legal ownership of products until consumed by the customer. The consigned inventory is physically located in the customer's warehouse and managed and controlled by the supplier until it is issued for production consumption. When consumed by the customer, an electronic payment is typically sent to the supplier, and the supplier will perform required internal inventory and financial transactions
Constraint Management	A methodology for identifying 'bottlenecks' in a manufacturing or similar business process.
CTP -- Capacity to Promise	A supply chain product management term used by customers to determine a manufacturer's capability to make a product in certain quantities by certain dates. Similar to ATP.
Customer Self-Billing	Used when a supplier retains ownership of products in customer specific consigned inventory warehouses, and to electronically receive/process payments and inventory adjustments upon electronic notification of consumption. When Pay-As-Built must be used in conjunction with Sequenced Shipping activities which are directly linked to specific vehicles, customer self-billing can be used with any type of shipment and requires only notification of goods by part number/quantity.
DFL -- Demand Flow Leadership	A "pull" form of QR and ECR that goes beyond point-of-sale and includes forecasting and other methods of determining customer demand.
Demand Reconciliation	The reconciling (netting) of customer-received demand by taking into consideration goods that have already been shipped, but not received at the customer's location. Valid methods are: Identifier – Reconciled by identifier (valid for JIT only). Cumulative (Default) -- Releases/JITs are reconciled on a cumulative basis. Discrete – Releases/JITs are reconciled on a discrete basis. None – Releases/JITs are not reconciled.
ECR -- Efficient Consumer Response	The grocery industry's version of JIT or QR.

ERS Evaluated Receipts Settlement	An internal payment on receipt process where an ERS is generated from a bar-code scan of goods as they are received at the dock.
Fast Order Entry	A method to speed-up/replace manual order entry.
FRI - Floor Ready Inventory	Inventory that is shipped with a floor display device. (Does not require shelf space)
JIT -- Just-In-Time	A method of controlling and reducing direct and work-in-progress (WIP) inventory by having suppliers deliver material "just in time" to manufacturing.
Landed Cost	Cost of a product that includes all shipping, customs, and other costs associated with delivery to a prescribed destination.
MAP -- Manufacturing Assembly Pilot	A project jointly sponsored by the AIAG and the DOD to improve the flow of information to all levels of the automotive supply chain.
MRO -- Maintenance Repair Operations	A term used to describe the market segment for purchases of goods and services necessary to operate and maintain a business. Does not include goods and services that become part of a manufactured product. See CMMS.
Pay-as-Built	Suppliers that use sequenced shipping also have the option to assign the shipped goods to a customer specific consigned inventory warehouse/location, and receive payment (electronically) from the customer at the time the goods are consumed in the customer's manufacturing process.
POP -- Pay on Production	Similar to pay-as-built where payment is paid on production, not on or after delivery.
Product Configuration	The ability to configure small quantity, non-mass production products.
QR -- Quick Response	A form of JIT used by the retail industry.
Release Management	An integrated solution designed to meet the requirements of a repetitive, high volume contract-based order business environment.
Risk Management	A process used to determine the impact and risk exposure of specific initiatives. For example, choosing a new, but untried, technology that may deliver a maximum improvement of five percent, but if unsuccessful puts the entire process at risk, may not be worth the risk for just a five percent gain.
SFA -- Sales Force Automation	A class of software applications that manages the selling portion of a business operation.
Sequence Shipping	The ability to support customer demand that requires the supplier to pack product in a specific order prior to shipment.
Trade Funds Management	The planning, controlling, and tracking of spending related to marketing products and conducting business. The entire process begins with a plan for spending of funds, continues with commitments of funds and tracking of those funds and payment settlements. As certain expenses are being accrued, they must be registered as liabilities within the ledger.
VMI - Vendor Managed Inventory	VMI is the process of a vendor assuming responsibility for managing the replenishment of stock. Rather than a customer submitting orders, the vendor will replenish stock as needed. Sometimes referred to as supplier-managed inventory (SMI).
VOI - Vender Owned Inventory	A variation of VMI where the vender owns and manages the inventory and the retailer only provides space and collects money.