



# Digiconomy™ The Digital Economy

## "The War between Assets and Information"

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We have heard over the last couple of years that we are entering, or may have indeed entered, the Digital Economy (Digiconomy). Leaders around the globe mainly inspired by the irrepressible US economy have heralded a new era. Many business managers and consumers watch from the sidelines, already overburdened with the hype. We are being told that what we do now, as consumers, managers, leaders or workers, is no longer "best in class" and that we need to change everything. This may be true – but to help demystify the broad impact of the Digiconomy, this short paper will explain the general evolution of the use of the Internet and propose a framework for its application as the primary enabler of the Digital Economy. The premise here is that the move from mainframe to client/server was a major technology revolution that did not, in the main, change the fundamentals of businesses and how they interacted with their trading network.

The move from client/server to the Internet is also a dramatic technology shift, but there is an opportunity as never before that affords us the ability to create new business models and replace old models. However, the majority of those touting "change" today are missing the mark – they are simply dressing up old processes with a new "Internet" coat. The real benefits, the real Nirvana, are to be found in the new processes that are just now coming to light.

This paper will review the state and future of the Digital Economy using two models, both focused on Business-to-Business (B2B). The initial model outlines the broader use of the Internet across several commerce models. The second model will explain the use of the Internet and the associated hype from the perspective of a particular business and how it relates to its trading partner network. Particular attention will be given to the current practices and processes of Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), and Advanced Planning and Scheduling (APS).

This paper is broken up into three sections:

- The Digiconomy Framework
- The End of ERP as we Know it, and
- The Life Cycle of the Customer Order now has an End Date.

The first part of the paper describes the overall Digiconomy framework. This positions the reader correctly when the discussion turns to Business-to-

Business(B2B) commerce models such as CRM and how this differs to ERP. The last section focuses exclusively on how our current business models are outdated in the new Digiconomy and how they are evolving.

## The Digiconomy Framework Part 1

This section contains two key concepts to explain the Digiconomy. The first describes the general business framework into which the Internet has been thrust as a change agent. The second will focus on the internal mechanisms inside an organization and how the Internet affects them.

Framework 1: The Digital Economy Framework

|                      | Business Model       | Buyers and Sellers        | Commerce Model           |
|----------------------|----------------------|---------------------------|--------------------------|
| Integration          | EDI                  | 1 to 1                    | e-Commerce EAI           |
| Catalogue            | Self-Service ERP/CRM | Supply Chain 1 to Many    | e-Commerce MRO           |
| Auction              | Self-Service ERP/CRM | Supply Chain 1 to Many    | i-Commerce eBay          |
| Exchange Procurement | Self-Service CRM/APS | Supply Chain One to Few   | i-Commerce VerticalNet   |
| Collaboration        | Exception APS/CPFR   | Value Chain 1 to 1, Joint | c-Commerce b2b-icommerce |

The Rows in the Figure 1 are explained as followed:

**Integration:** This represents the simple exchange of data between companies (B2B) and represents “what you do now”. This includes the scheduled passing of customer order information (e.g. Point of Sale consumption) via EDI today by a customer to a supplier. Originally we all used the word “integration” to describe this. Later the programs were referred to as “middleware”. Today this is called Enterprise Application Integration, or EAI. Today the sexiest “vision” in this space is “running EDI over the Internet”. This is different in reality to the other “layers” in this framework as this is more of an IT issue. The remaining items are more associated with “ways of doing business”. However, one needs to realize that there is a great deal of money today flowing toward EAI vendors on the assumption that the greatest share of B2B Commerce will be effected over the Internet and hence these vendors will have a lot to do. However, the facts are this is really a very old problem and those EAI vendors that focus on a legacy ERP model are ill-equipped to even understand the tornado that is sweeping this issue of B2B integration.

**Catalogue:** This represents the new on-line catalogue models that are being hyped by numerous ERP and even start-up companies. The model is that you might already have a paper-based catalogue that is always out of date and not targeted to your customer. Now, with the Internet, you can create a soft-version of your catalogue and maintain it more easily. You can even add more valuable and up-to-date information such as pricing and availability. Further, you can locate the on-line

catalogue inside your customer or prospect's company via the web. Lastly, you can even integrate the catalogue with your order processing system so that when an approved user selects an item for purchase, it can kick-off the necessary financial transaction in both buyer and seller business systems.

**Auction:** This represents the new range of web sites dedicated to bringing together large number of sellers and buyers to auction off products and services. This is also "what you do now" except that it is a more perfect economic model as the information is more "perfect" according to rational and classical economic theory. This is explained in the popular saying "your competitor is but one click away".

**Procurement and Exchange:** This represents the more recent series of supported web sites powered by traditional ERP vendors. These provide communities of buyers and sellers where interested parties can find each other more easily and a much tighter relationship can be established. In the evolutionary process, companies move from an open, many-to-many auction model to an environment where they reduce the supplier base somewhat in order to create a tighter relationship. This is the realm of Plastics.net and Vertical.net. Since the world understands ERP, and because these web sites are very logical extensions to the ERP model, Wall Street is very focused on this area. However, this area does not offer many opportunities to completely re-engineer the relationship between trading partners, whereas Collaboration does.

**Collaboration:** The *newest* and most exciting development in the use and application of the Internet. Initiatives such as Customer Relationship Management (CRM) in general and Collaborative Planning, Forecasting and Replenishment™ \*\* (CPFR) in particular are changing the transaction and hence the nature of the relationship between trading partners. This phase is where companies realize that real long-lasting strategic change is the route to larger benefits. The previous phases do not recognize this and as a consequence represent "what you do today only faster".

The Columns in Figure 1 represent the different perspectives across which the evolutionary phases are discussed. For example, the **Business Model** describes the general way in which an organization sees itself and uses terminology to explain its vision. The **Buyers and Sellers** column lists the format in which buyers and sellers come together for a given phase. The **Commerce Model** describes the technology and gives examples of the model. As one would expect with any adoption curve, there are more examples in the early phases and fewer at the "early adopter" end of it. For the remainder of this part of the discussion, we will move from the upper left corner to the lower right and explain the process of evolving from one to the others.

\*\* Note that Collaborative Planning, Forecasting and Replenishment is a Trademark of the VICS organization.

## The Digiconomy Framework Revealed

Basically, Integration is as old as the hills. Ever since companies computerized more than one related business process, we spent money on integration. With the advent of ERP, this became paramount. Each ERP vendor, cognizant of their own environment only, developed their own preferred method for integration. With the advent of the Internet, companies realized that a new genre of integration was needed, hence the explosion in Enterprise Application Integration (EAI) vendors. This so called new market is in fact an old market with a new slap of paint on it. What is occurring now is that software vendors and end users are now buying into these EAI vendors, even though at some point in the future, we will all be using an EAI tool. The problem is that each EAI vendor uses a different method for integration. So guess what? At some point in the future, we will have to integrate systems that use different EAI tools – there will be new market that will spring up that sits *between* the EAI tools and integrates them! This is a logical argument if one follows the trend in place today in the market.

The benefit of EAI tools is that they provide a means to integrate multitudes of applications inside and across the firewall. That allows the software vendors and end users to focus on their core domain expertise. However, the lack of a consistent and singularly focused use of these EAI tools will prevent the benefits from being widely recognized.

The most sophisticated and most used model for EAI today is EDI. Interestingly, this is a sad state of affairs because EDI is not a global standard, e.g. ANSI X12 and EDIFACT are not directly compatible. Also, it is an expensive model to pursue. EDI requires an expensive infrastructure to be secured. EDI was designed for large batch transfers of data between computers. The race today is for “EDI Players” to move to the Internet. Too often people get caught up on the idea of using EDI without adequate understanding of its limitations.

### “True” Collaboration: How it works

Retailers and Manufacturers must have an established relationship. Indeed, for several years now retailers have been reducing and rationalizing their supplier base. For this reason it has become critical for the value chain to be successful that both customer and supplier create and maintain a strategic relationship. This is beyond buying and selling commodities – this is about creating an environment in which operations are synchronized and people collaborate to develop automatic replenishment processes that eliminate costly and wasteful activities such as pricing, order promising, order tracking and expediting. This is affected through “true” collaboration, or CPFR (Collaborative Planning, Forecasting and Replenishment, [www.cpfr.org](http://www.cpfr.org)).

If you follow the Industry Analysts, then you will recognize the concept of true collaboration. Many months after CPFR was published, and very recently, AMR conceived of Business Community Integration, or BCI. BCI is slightly wider in concept than CPFR in that it talks about anything that trading partners will “jointly” work on. Conveniently this is explained below. GartnerGroup preceded AMR with their concept of Collaborative Commerce, or “cCommerce”. The GartnerGroup concept closely resembles a very precise description of true collaborative processes. The key point is that both names refer to any processes that cross boundaries and

where trading partners jointly produce something of value. CPFR is sometimes referred to other, less well defined or standardized processes such as Collaborative Product Design and so on.

### **How buyers benefit**

Buyers agree with a key supplier to establish a stronger relationship than heretofore realized. The buyer gets the greatest commitment from the supplier in terms of service level, long-term price reduction in line with dual cost-cutting processes, and so on. This is not about bulk buying from several sources for price reduction. It is about hooking up two businesses in order to jointly share in the upside as well as the downside.

### **How suppliers benefit**

Because the supplier acquires a commitment from the customer they can take advantage of a more stable demand pattern and remove much of the traditional volatility that exists today. This means the supplier achieves efficiencies in supply and hence shares them in price reduction with that strategic customer.

### **Where it works best**

Today, CPFR is in the realm of Consumer Goods. However, it is also being exploited for planning (not execution) by high tech companies ([www.rosettanel.org](http://www.rosettanel.org)), retail ([www.uccnet.org](http://www.uccnet.org)), automotive ([www.aiag.org](http://www.aiag.org)) and so on. There are numerous examples in other segments. Planning represents the anticipation of customer demand; execution represents the physical creation, movement and accounting of goods. Typical planning data is a forecast; typical execution data is a customer order. If you can collaborate on a customer order and get buy-in to a value chain "one number", then the customer order goes away (becomes automated).

Other than for consumables, an MRO environment could and should progress to a collaborative model where traditional negotiations are replaced with immediate and synchronized collaboration. Pre-Planned purchases should evaporate if trading partners open up their systems to each other and establish collaborative relationships. Commodities, where price is the primary and perhaps only acquisition driver and there are numerous supply alternatives, are not a good fit for CPFR. Anyone who uses forward buying is not a good prospect for CPFR unless their competition is about to remove them from the market because they adopted CPFR first. Users should realize that forward buying is a symptom of a very old problem – not a solution. By realigning companies from discrete demand chains / supply chains to a value chain forward buying can and will be eliminated.

### **How prices are set**

CPFR is unlike any other business initiative. Auction and Exchange promote "perfect information" according to classical economic theory. The Internet makes it more likely that this is a reality. In the B2C space this is exemplified with the notion that a consumer can be at a store about to select a product for purchase when their PDA device, connected to the Internet, notifies the consumer that the same product can be purchased elsewhere at a lower price. Information is not "perfect" so buyers can obtain access to all the information (at a fraction of the historical cost) in order to make a rational decision.

In the case of established, collaborative relationships, pricing becomes a process rather than a barrier or phase in negotiation. Pricing becomes a process of hooking up two companies with disparate economic models on different cycles and establishing a common foothold for both to achieve their goals. The commitment made through CPFR ensures that pricing is a give and take process that evenly shares the upside and downside. Pricing is agreed periodically on a collaborative basis, not part of the ongoing day-to-day buyer and seller negotiation.

### **Can buyers be sellers?**

Yes. CPFR operates between buyers and sellers. A seller can in his or her turn be a buyer from someone else. Therefore CPFR lives between retailers, distributors, wholesalers, manufacturers and raw material suppliers.

### **Key Challenges**

The primary challenge here is the “people” thing. Auction and Exchange over the Internet is the epitome of a formal economic and industrial model – only now it is faster and more self-service oriented. Auction and Exchange are today, and will remain for the time being, the dominant model of the Digiconomy as more buyers and sellers feel comfortable in an Internet-based model that closely resembles what they always wanted to do before the Internet. The Collaborative model, despite the use of the word in the Auction and Exchange mediums, will not be the dominant model for some time. It will be the preferred route for innovators and early adopters for another 12 months, and then move into the early majority phase.

CPFR is not “Darwinian” on a gene level but more on a species level. Exchange is efficient supply chain and CPFR an effective value chain! CPFR is a new business model that, like MRP in the 1970’s before it, could (a big capital “C”), change the way we make things in the western world.

## The Digiconomy Framework Part 2

### Framework 2: Use and Abuse of Collaboration

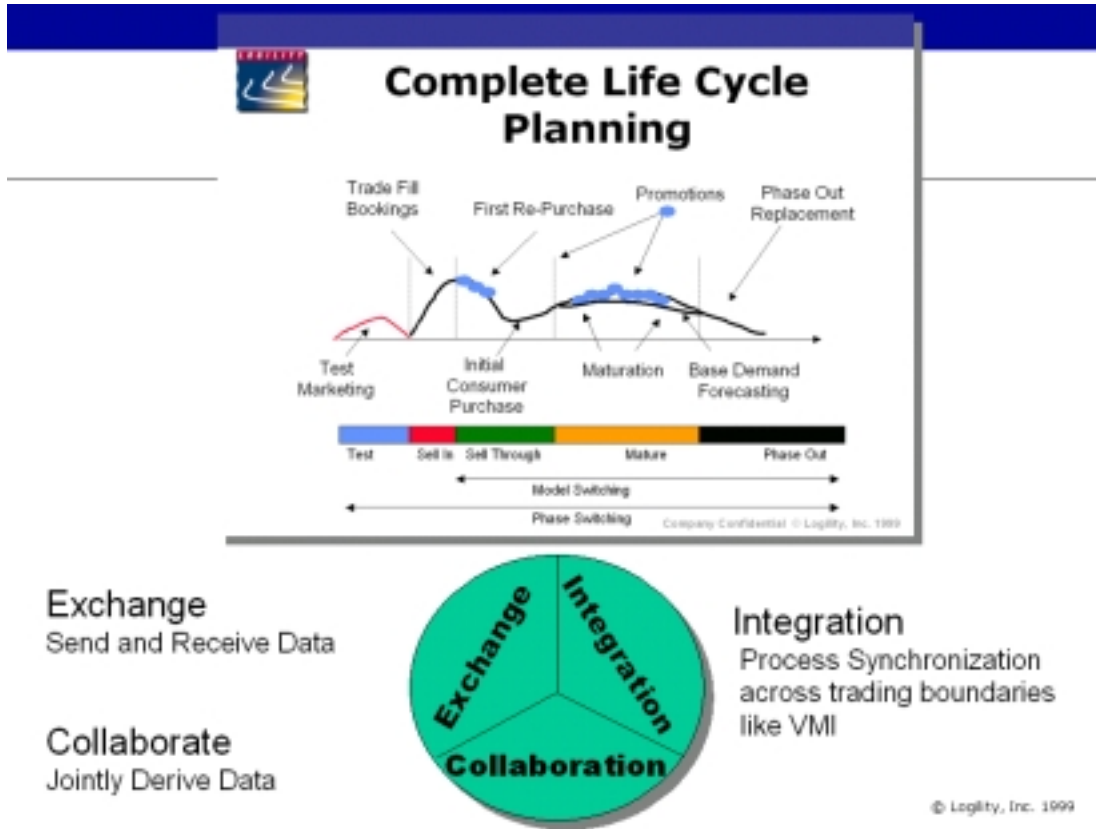


Figure 2: Product Life Cycle and Business System Integration

Using figure 2 we will discuss two key themes and how they intersect. The first theme is that of “stages” in a product’s life. Most companies that have products to sell understand or at least experience the fundamental issues associated with a traditional “life cycle”. The stages of a product life cycle have been written about numerous times in well-known texts. Suffice it to say that this is a well known area and yet many companies still do not approach the finding of a solution in a similar manner. Often times companies have applied systematic approaches to break the problem into smaller subsets; then they have acquired or built focused tools to optimize those local areas. The end result is a series of discrete optimized areas that, taken together, result in an un-optimized life cycle. Taking a more systemic approach to these issues is what is needed.

The second theme is shown at the bottom of figure 2. It illustrates the growth of B2B models during recent years. The vast majority of companies have spent the last 15 years and millions and millions of dollars focused on the physical creation and movement and accounting for goods as they move through the *supply* chain. Consequently “best practice” was until recently all about using EDI or some other efficient model to send and receive vast amounts of business data across to a trading



partner. Typically this could be all our customer orders or purchase order information. Great savings were made in doing this by eliminating paper, etc. This is known (by this framework) as *exchange* – the sending and receiving of data. It is synchronous in nature – one-way-at-a-time flow. Generally it was optimized when it happened automatically and between computers.

*Integration* is an extension to exchange that came about around 1992 when Kurt Salmon introduced to the open market the concept of Vendor Managed Inventory. Today the process of automating the replenishment between trading partners goes by other names depending on the industry. In the grocery space, it is called Efficient Replenishment which itself is part of a wider initiative called Efficient Consumer Response. Quick Response (QR), Continuous Replenishment Planning (CRP), Retailer Managed Replenishment (RMR), Co-managed Inventory and others are examples.

Integration here represents the automatic and synchronous behavior between two computer systems – those of a buyer and a seller. Ideally a buyer uses exchange to automatically send some useful data (such as shipments, POS sales) to the seller who in turn automatically calculates a shipment order to the buyer location (store). This is the essence of VMI. It was really the realm of the larger companies since it required EDI as the vehicle to affect the huge volume of data transfer (exchange) between partners. EDI is expensive and was therefore only really adopted by the largest companies. Even today some reports suggest that less than 3% of companies worldwide use EDI.

Other than EDI, VMI and its sisters had other drawbacks that, at the time, appeared as non-issues because the technology was not sufficiently evolved. For example, such exchanges of data needed to make VMI work were batch. VMI was great when sales actually met forecast but in the case of exceptions, VMI broke down. On the supply side, the inability to deliver also was not communicated early enough to prevent poor performance. Further still, the relationship between trading partners was far from being an equal deal. Often times the seller did more of the work and ended up absorbing the buyer's excess inventory. The buyer thought VMI was great as the seller did all the work and held all the risk (inventory). The seller suffered immeasurably. Hence, later VMI was implemented down to the raw material suppliers – the result being that the cost and risks of inventory were passed on!

Collaboration shown on figure 2 is all about “jointly deriving data”. For example, if both buyer and seller jointly work on the seller's sales forecast, and they both agree to build business plans around it, and the buyer plans to deliver product to meet that plan, then the resulting “one number” becomes a contract between the two companies. Gone are the short term, disruptive promotional issues; up goes the service level *at the customer location*; down goes the inventory and so on. The point is that “jointly deriving” the data and signing up to it is vastly different than anything tried previously. Lip service has been given readily to “partnership” but only when this becomes a financial arrangement is it more likely to succeed.

What was the end result? The customer's customer is more likely to get the service they desire. This is the end game. It provides a process to any company that, if adopted, will assure a higher customer service to their customers' customers. This is the ultimate in hub-and-spoke selling!

The two themes of product life cycle and business systems integration converge because, whatever the stage of the product life cycle, all three business

communications models are applicable in varying levels of detail. For test marketing, exchange and collaboration are key; in product launch, the same; for a mature product where more complexities of replenishment exist, all three are needed with now greater focus on collaboration; for product phase-out, exchange fits less and collaboration is again key.

### **Summary**

The question is, “where does collaboration apply?” If one looks now at both frameworks 1 and 2 it is easy to see. Every company that buys or sells a product on a periodic basis has a choice. They can build their customer service model on a traditional, self-service model that today, with the Internet, offers incremental (perhaps evolutionary) benefit over current business models; or they can replace those outdated models completely and aim for step-change or revolutionary benefits by going for a collaborative model.

What makes things worse is that the word “collaboration” is today the password to Utopia. All software application vendors, EAI vendors, System Integrators, consultants, and so on all market their solutions as “collaborative” solutions. Companies that do not know the first thing about this step change (inflection point) are all over this collaboration movement. The Internet is the vehicle – collaboration is the key. In the last 4 months on CNN I have seen SAP, Oracle and PeopleSoft all advertise “collaborative portals” and so on. And as this paper shows, these traditional, dare I say boring, models reflect no true collaborative processes at all. Caveat emptor!

## **“The End of ERP as we Know it”**

### **Supply Chain Management is born**

Supply Chain Management (SCM), as it was originally conceived, focused on the movement and flow of products and *information between* trading partners. It did not focus on inward processes but on the processes that existed between trading partners. Some companies realized that this focus was synonymous with the planning elements required to make logistics work properly. However, marketing people got involved. They did not want the term logistics to lose face, so the terms “supply chain management” and “logistics” became intermixed. In 1990 one could easily go to a seminar or read a paper on logistics and supply chain management and assume these were identical processes. The original concepts were different, but the marketing people confused the issues.

Today, almost every consulting and software company in the known universe now uses the phrase “supply chain management”. (Note that I predict that before 2000 is out, these practices will absorb some amount of the Electronic Commerce arms and involve “collaborative” technologies). Even real businesses use that phrase. All of a sudden we all now need to “do” supply chain management. However, the ERP systems that existed in the market did not provide this level of functionality. This wonderful concept did not appear as a possibility for any of the companies spending the millions of dollars on ERP implementations. The realities are already setting in – proven by the recent moves by SAP, Oracle and PeopleSoft, three leading ERP vendors, who are rushing to add their own (albeit basic) level of Advanced Planning and Scheduling software.

### **So ERP now includes SCM?**

So to minimize the gap and gloss over the missing functionality, and to buy the time necessary to add the planning or SCM tools to their stable of products, the ERP companies began a deliberate move to “own” the phrase SCM. For example, SAP, the worlds largest and most successful ERP provider, overnight changed it’s message from the leading provider of ERP systems to the leading provider of SCM systems – without actually adding any new products or features. The size of SAP dictated that all other ERP vendors had to follow suit. At a stroke, the market known as SCM was now part of ERP. All the niche providers that focused on “planning” systems related to logistics and partner relationships had just lost the war of words.

Thankfully, some innovative consulting company introduced the phrase “advanced planning and scheduling” (APS) to represent the remaining planning functionality that was preserved by the vendors in this space, such as Logility. The obvious implication is that all the ERP vendors may or may not deliver SCM functionality, whatever the phrase SCM means, but they surely do not deliver what is known as APS. Historically however, “APS” itself is a term that grew out of the finite scheduling models that were added to MRP in the Eighties to assist in the improvement of the MRP processes. However, the term APS has grown to include distribution, transportation and demand optimization. But beware – several writers will use APS to mean plant planning and optimization exclusively and others will use it liberally.

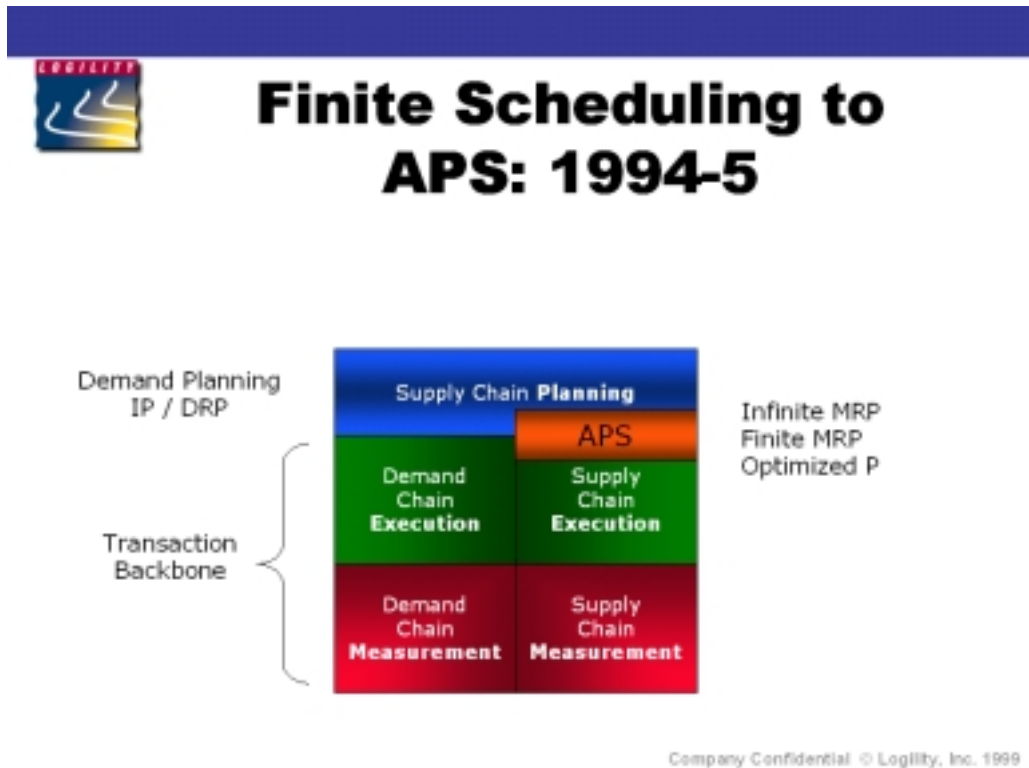


Figure 3: Supply Chain Planning preceded APS, But APS subsumed SCP  
 Here you see examples such as Demand, Inventory (IP) Planning, and the original Infinite MRP which evolved to finite MRP and later “optimized P” as in the Planning in MRP

### A Name suitable for the Year 2000

If one actually takes the time to analyze what people do at work, one can make some useful, insightful and communicable determinants. The first is as old as the hills, that is: Every operational activity undertaken in a firm is focused on Planning, Execution or Measurement. Execution represents the physical creation and movement of products or materials; Measurement represents the counting of products, resources, materials and activities that are relevant to the performance of the execution activity, and Planning is the various activities that ensure the right products or materials will be in the right place at the right time at the right cost to ensure effective satisfaction when the (physical) order turns up.

It is a strange and often misunderstood point that the bulk of the time spent by management leaders in the last 20 years has focused so much time and money on the physical movement and accounting of goods. The physical creation, movement and measurement aspects of the equation represent ERP. It is generally recognized that ERP concerns itself with efficiencies. And for the last few years many companies have saved millions of dollars on “simple” efficiency drives. But the very foundations, the essence of ERP, have absolutely nothing do to with “the removal and elimination of barriers between trading partners”.

### **What about “Collaboration”?**

What you might not know is that the word collaboration actually has a sour taste in certain parts of the world. During World War Two (yes, we’re back there again!) after the fall of France, the German Wermacht set up a puppet French government referred to as Vichy – so named for the surrogate capitol city and land mass of France over which the puppet government had control. ‘Collaboration’ was a word used by the occupied and “true” French people who hated the subjugation and oppression of their country folk who actually worked with the German occupiers. It was a sour experience and so the word has sour connotations in France.

Beyond the history lesson, the word “collaboration” has gone through the same process that SCM did with respect to ERP. During 1995 and 1996 two particular companies pioneered new business processes using the Internet. A year later an industry move was born that replicated the earlier work but now with the added weight of several very large retail organizations. This industry move resulted in another new acronym, that of CPFR – or Collaborative Planning, Forecasting and Replenishment. In fact the history does mark CFAR, Collaborative Forecasting and Replenishment, as the forerunner to CPFR. The point here is that the definition of Collaboration is “the removal and elimination of barriers between trading partners”. Guess what? The ERP vendors, spotting another “hot ticket” are about to make a play for the word and concept associated with “collaborative planning” even though they again provide very little in terms of tools to achieve such goals.

But what some vendors focus on for their existence, like Logility, are the tools to enable true collaboration between trading partners. This collaboration involves, as we shall see, sharing of important plans and data across the inter-company spaces. For the Millennium, this is being called Business-to-Business (B2B) Collaborative Commerce.

### **Will the real meaning of Supply Chain Management Stand up: A proposal.**

The graphic at Figure 4 is my attempt at a business model that should keep everyone happy. Since every presentation you see assumes you understand what is meant by “Supply Chain Management” or it tries to explain it, I have found this graphic useful in getting everyone I meet to an agreement point – that is, what is the “big picture?”

Figure 4 synchronizes the meaning of several themes already introduced by this paper and introduces one new one. Integrated are the concepts of ERP, SCM, Plan, Execute and Measure, with Demand Chain Management, or DCM.

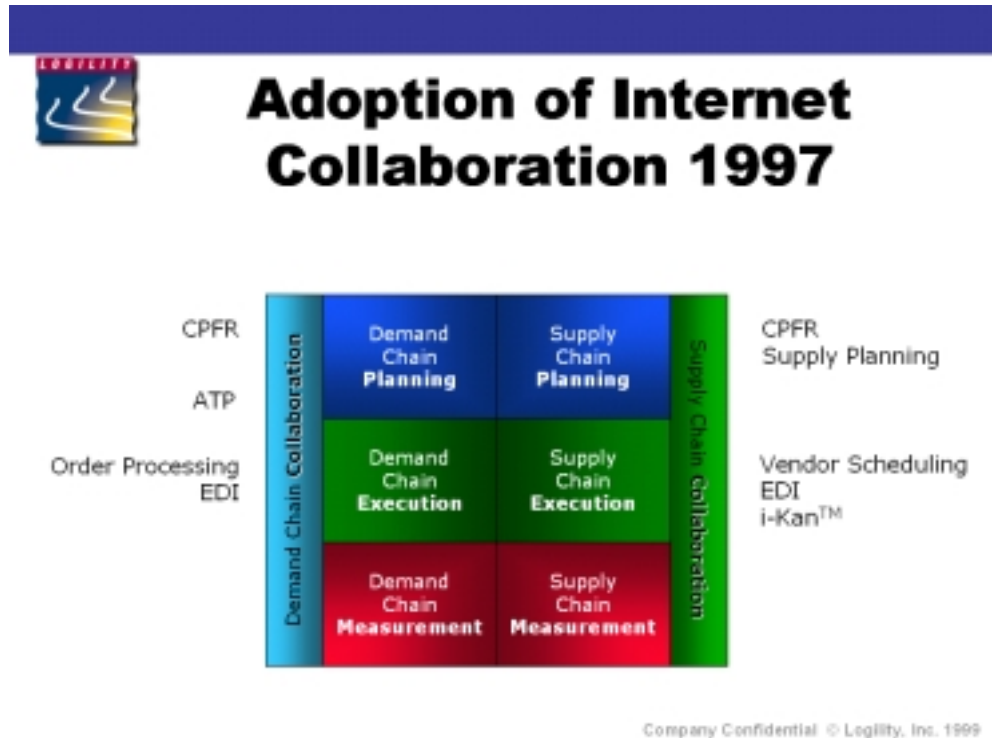


Figure 4: A perfect model?  
ERP, APS, SCP, SCM, and Collaboration across  
All trading partners and processes

Concepts explained in this graphic:

### Demand Chain Management (DCM) versus Supply Chain Management (SCM)

DCM is all of the processes (plan, execute and measure) associated with your organization's customers and markets including external factors. SCM are all of the processes (plan, execute and measure) associated with your organization's ability to meet such needs, including your own capacity and your supplier's capacity. Taken together, DCM and SCM equate to Value Chain Management – the series of value-add steps synchronized from raw materials to end consumer.

### Planning, Measurement and Execution

Execution is associated with the physical side of product creation and movement from one end of the Value Chain to the other. Planning concerns itself with anticipating an order (demand). Measurement is the third phase of the Value Chain Process and relates to the performance and transaction-capturing side of a business – such as the financial suite. Planning includes all those steps that must be taken to anticipate and prepare for the eventual execution of an order. Planning is synonymous with information.

Logical extensions that combine the previous concepts lead to Demand Chain Planning, Supply Chain Planning and the combined Value Chain Planning. Demand Chain Execution and Supply Chain Execution combine to give Value Chain Execution;

and Demand Chain Measurement and Supply Chain Measurement combined provide Value Chain Measurement. In all cases this is a logical and meaningful presentation of often-quoted and often-misunderstood concepts.

Here is an illustration of these points as examples:

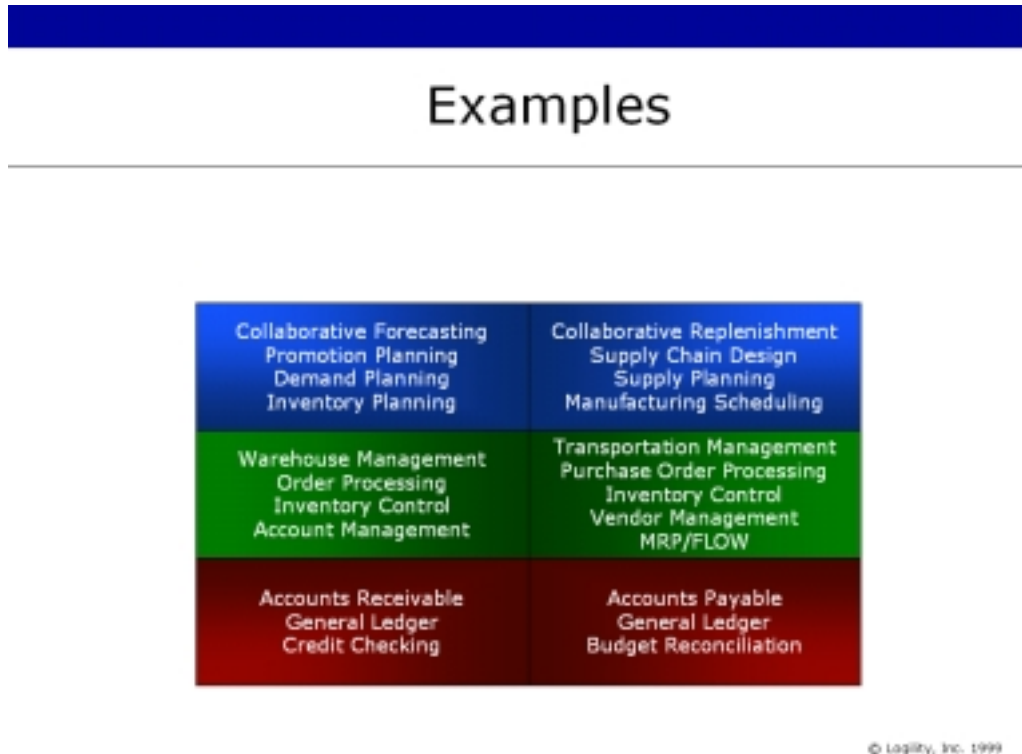


Figure 5: Examples of where application and processes fit in to the "Perfect Model"

### Demand Chain and Supply Chain Collaboration

Demand Chain Collaboration concerns itself with all the customer and market-facing processes in your organization – such as Collaborative Forecasting (a Planning function) and Collaborative Order Processing like Dell Online (an Execution function). Supply Chain Collaboration concerns itself with all the supply and supplier-faced processes in your organization – such as Collaborative Replenishment in planned receipts (a Planning function) and Collaborative MRP (an Execution function).

#### Collaborative Planning, Forecasting and Replenishment

Back in 1995 and 1996 Wal\*Mart and Warner Lambert piloted an EDI and Excel-based collaborative processes whereby both companies participated in the determination of the demand plan for Listerine Mouthwash – and the subsequent supply plan. The pilot produced significant benefits in terms of increased service level at Wal\*Mart to meet their customer needs, lower inventory throughout the value chain and increased revenue to both Wal\*Mart and Warner Lambert. In those

days the initiative was called CFAR: Collaborative Forecasting and Replenishment. The facts, published at a Benchmarking Partners (Boston, Ma.) meeting late 1996 demonstrated that this pilot was indeed batch-based (using EDI), manual in nature, and actually focused only on the forecasting process and not the replenishment process. More mysterious was the so-called involvement by market leaders SAP and Manugistics. Both companies paid money to sponsor the event and process but neither party's software was used to generate any of the data used in the pilot: Manugistics used at Warner Lambert at the time received the final one-number forecast!

At the same time that this process was being built around EDI, Logility was implementing with Heineken USA the world's first truly Internet-based collaborative planning tool. This enabled Heineken to work with their customers (450 of them now) in the USA to jointly derive the sales forecast at the customer level (distributor) and also the replenishment order from Heineken USA itself. In fact the first pilot was implemented even before Netscape Communications was a public company! In those days, most companies thought that the Internet provided only a mechanism to host corporate web pages.

In June 1997 the VICS organization published a document that described CPFR, which was the evolution on from CFAR. It is this model that today represents the most advanced example of a new business process that takes advantage of the Internet as a means to break barriers down between organizations. Almost all other models being touted by the majority of vendors are basically the same as the older business processes – only faster.

Examples of truly collaborative, new business processes:

- CPFR
- Collaborative Transportation Management, CTM (another VICS Committee)
- Product Design
- Promotion Planning
- Load Tendering

Examples of "same as" models touted as new but really only faster:

- Order Promising
- Order Entry
- Purchase Placement
- Catalog Fulfillment
- MRP scheduling
- DRP scheduling
- Inventory Availability
- And so on

There are very few examples of the true collaborative processes and CPFR is the most advanced. So what does it look like?



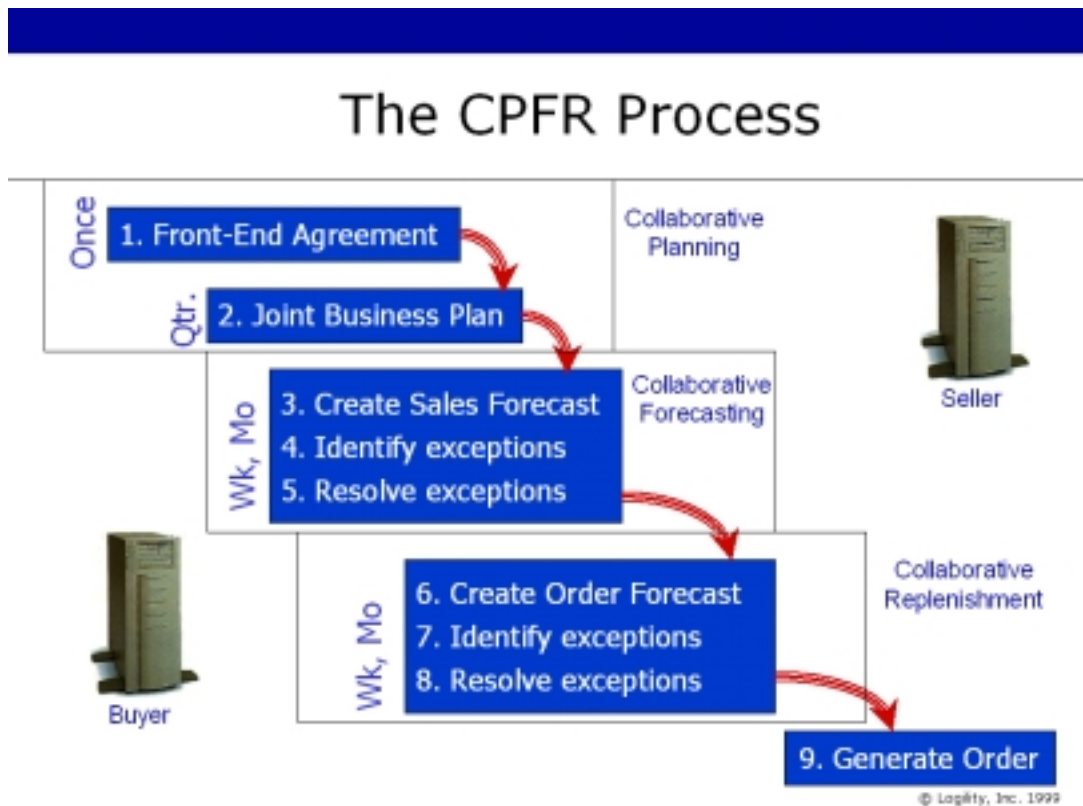


Figure 6: The Nine Steps of CPFR. These nine steps are described in the Guidelines published at the VICS web site, [www.cpfr.org](http://www.cpfr.org). CPFR is a Trademark of VICS.

Planning is the focal point of the relationship and represents a formal agreement between companies. If a product is highly commoditized, has many suppliers, and price is the only real determinant to purchase, then CPFR is not a suitable model. If the companies need to reduce the supplier base, create strategic relationships, and want to align their victory in the market along vertical value chain boundaries instead of remaining in yesterday's supply chain models, then CPFR is applicable. If companies want to automate effectively the replenishment process between themselves, then CPFR is applicable. Visionaries today see CPFR as the most advanced model available. It goes beyond Vendor Managed Inventory, Efficient Replenishment, Quick Response, Continuous Replenishment Planning and others and it bears none of the overhead of those models.

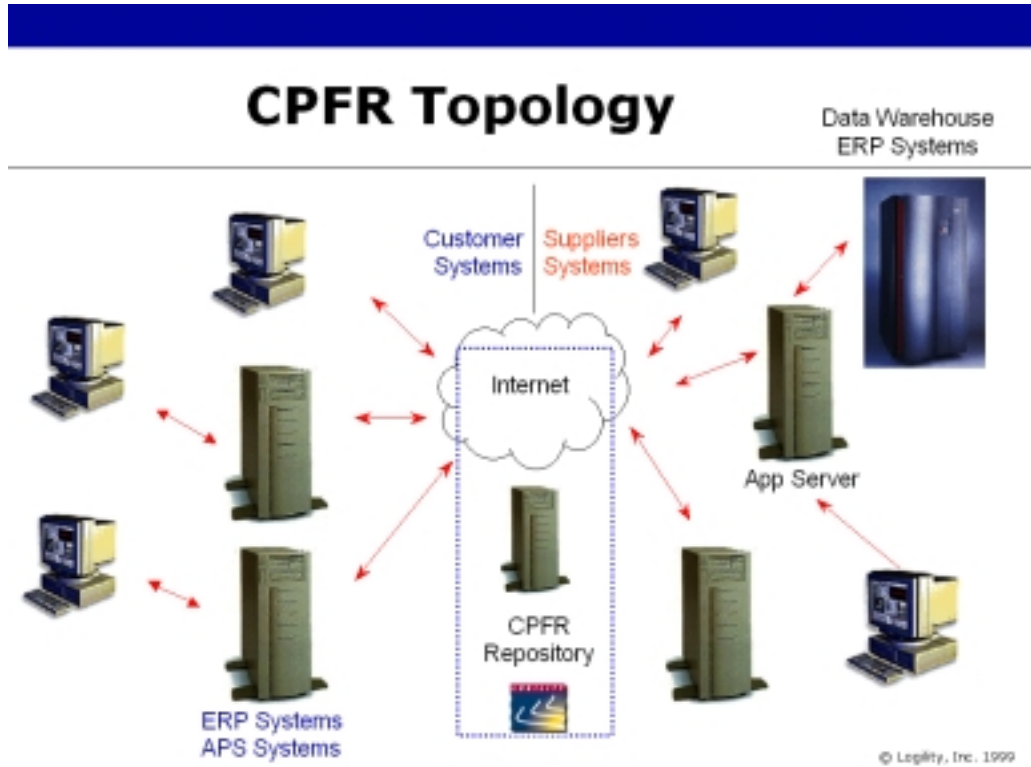


Figure 7: A “hosted” topology for CPFR

A few individuals recognize the power and future of CPFR and collaborative processes in general. Here is a review of the major highlights of the past and what we expect for the future.

| Time Line | Focus   |
|-----------|---|
| 1998      | Pilot Mode<br>1 Company running their business with CPFR  |
| 1999      | Innovator Stage<br>Multiple Pilots (including International) coming to completion   |
| 2000      | RosettaNet adopts CPFR standard<br>Early Adopter Stage<br>Key large retailers adopt CPFR, followed by large Manufacturers<br>Other industries follow CPFR and adopt standards; perhaps AIAG |
| 2001      | Early Majority Stage<br>CPFR rolls out across retailers in general; dot.com retailers follow second to bricks and mortar  |

2002

Tier One Manufacturers adopt CPFR widely  
"CPFR with everything"

Figure 7 describes a "hosted" model of CPFR where a series of buyers and sellers use a "service" approach to accessing a CPFR tool. Alternative models also available today include those where a company acquires their own CPFR tool and hosts it themselves. In this case each company would have a web server. The point is that CPFR is so flexible that it "exists" at every potential node in a value chain. It is also, as the graphic above demonstrates, the perfect application for the Application Service Provider market. No other business model fits so nicely in this space.

CPFR represents the "collaborative" extensions to Demand Chain and Supply Chain Planning. Collaboration became "hot" in the planning area before the ERP vendors even knew the value of the Internet. In the last three years, all the major vendors have revised their client/server strategies to follow in this direction. Today "collaboration" is the most over-used and misunderstood term in the industry. Aren't we lucky and thankful to our marketing executives! To help differentiate CPFR and non-collaborative processes that call themselves collaborative, there is one message and one test that can be applied.

CPFR "changes the transaction and hence the nature of the relationship between trading partners". If a so-called feature or model fails to achieve this, it is not truly collaborative in nature. The test is this. If the new feature or model "changes the transaction", then also ask the question: "Do both trading partners jointly derive the "thing" in question?" If parties basically just send and receive data to each other, this is more likely an "exchange" process and not a collaborative process. If both parties submit data and some model compares and attempts to merge the data, and then synchronizes the resultant systems, then this is an example of "jointly deriving" the data in question.

What is the ultimate goal of CPFR as currently envisioned? Basically the concept is that by sharing such collaborative one-number plans with multiple layers of the value chain at the same time (real time, global, secure) all the partners of the value chain can synchronize their businesses to the real trends (POS data) identified in the channel. The following graphic demonstrates this concept. This model eliminates the bullwhip effect we recognize in the value chain today.

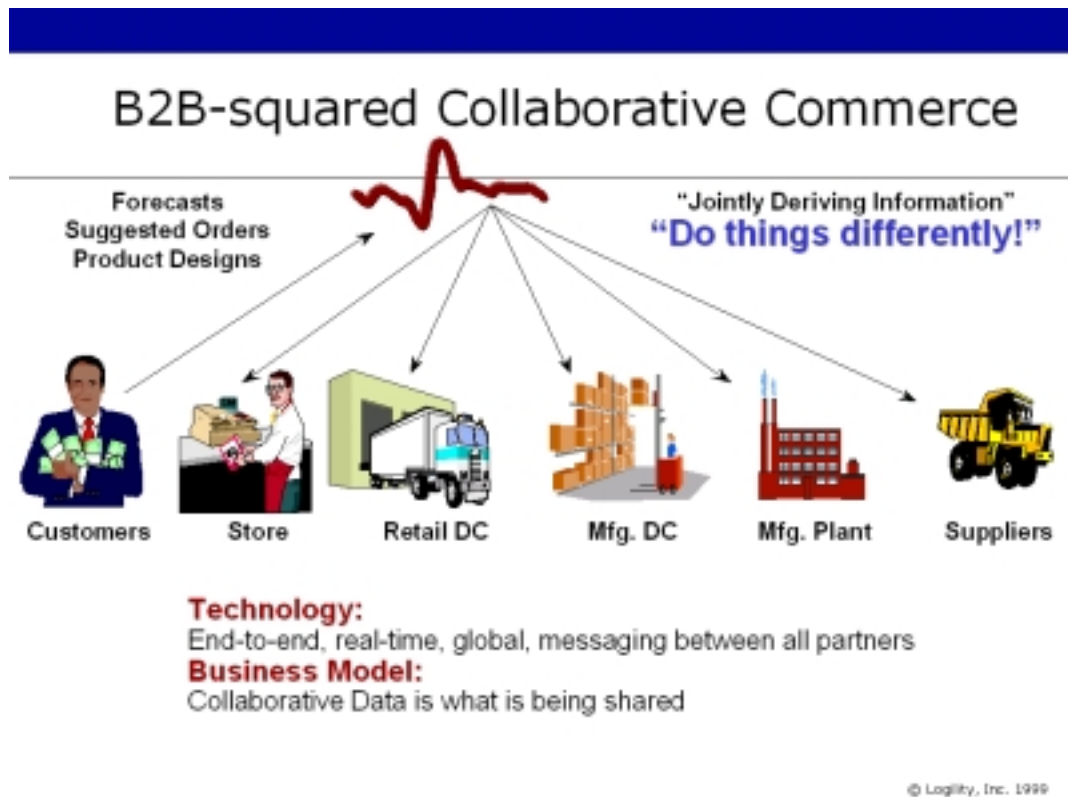


Figure 8: Global Collaboration across the Value Chain

### ERP and Logility

ERP provides for Execution and Measurement processes across the full Demand and Supply Chain – and is beginning to provide some limited and basic Planning functions in some areas. Logility specializes in the Planning processes across the entire Value Chain, i.e. both the Demand and Supply Chain.

Today, the ultimate in the naming game is **B2B Collaborative Commerce**. The use of the word "Collaborative" here represents all Internet-based processes – including planning, execution and measurement. However, only true collaboration "changes the transaction and hence the nature of the relationship between trading partners". And there is a test you can exert to determine if a process is true collaboration. Look at the data or information in question and ask: "is this jointly derived? If the data are jointly derived through a process, it is true collaboration. CPFR as explained above is the earliest example of this. There are other areas that are evolving including Collaborative Promotion Planning, Collaborative Transportation Management, and Collaborative Product Design. If the data in question has no joint component, then it is of the false collaboration model.

### The Advent of Customer Relationship Management (CRM)

Late in 1998 at AMR's Fall Conference, a whole track was dedicated to a "new paradigm" – that of Customer Relationship Management, or CRM. A full day and a half was spent describing what CRM is, and which software vendors were providing for the technology. At that time, CRM consisted of Sales Force Automation, Account

Management and Customer Service. Generally it could be seen to be several “traditional” business processes that were initially being deployed “as is” over the Internet. Hence they were attracting much attention.

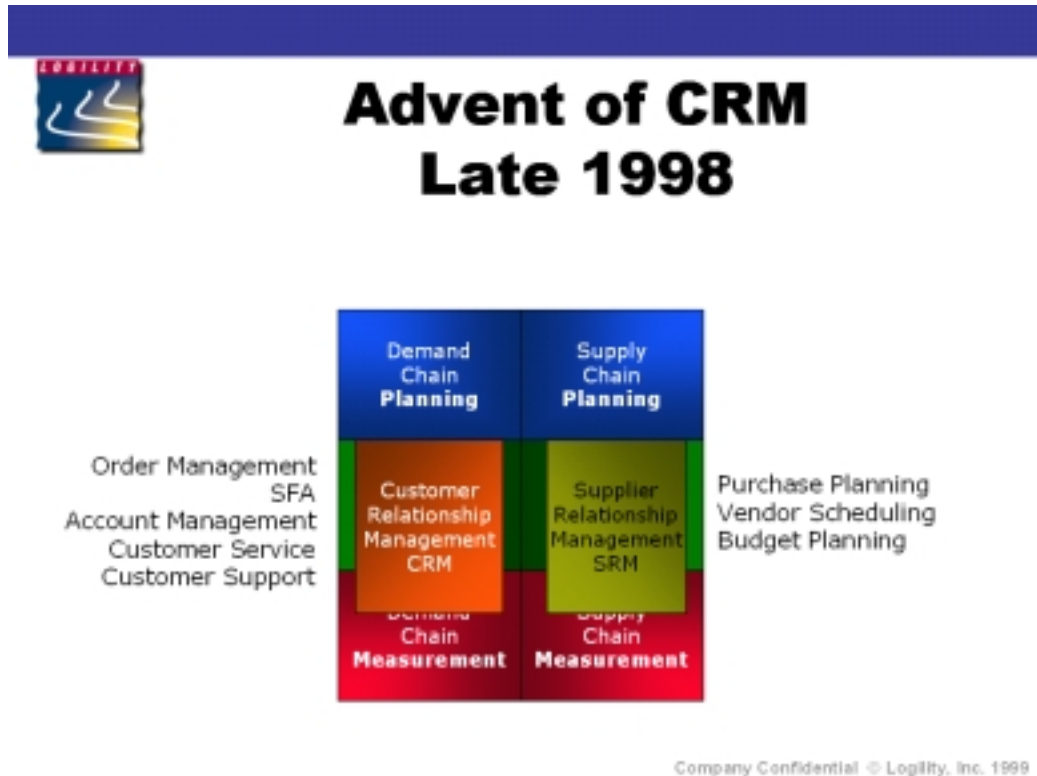


Figure 9: The Original Scope of CRM focused on Sales Force Automation (SFA), and the implicit and natural implication of Supplier Relationship Management

Then in early 1999 AMR Research and others started to realize that the very name “Customer Relationship Management” was a give away – anything that touches a customer is Customer Relationship Management. Therefore there was a mad rush to add to the stable of CRM tools the following: Available to Promise, Order Management, Order Entry, and, ultimately, Collaborative Planning. Now we have come full circle. What is actually very new and innovative (CPFR) is being swallowed up in another industry naming initiative. This is because CPFR can deliver such a high level of customer service it is being subsumed as a Service Level and customer initiative rather than a traditional Supply Chain or Value Chain initiative. What is true today however is that there are two flavors to CRM.

The older, decaying ERP suppliers are simply deploying their old screens inside a browser and calling themselves CRM vendors. These are virtually useless tools for collaboration and should be shunned by users. Then there are a second group of real CRM vendors that are building from the ground up applications that exploit the Internet. These are highly valuable to end-users as they represent a critical evolution in enterprise and value chain business management tools. So what of ERP, CRM and APS? Since APS never “made it” to the size of the ERP market but did exceed the ERP market growth rate, and since ERP vendors’ concepts were commoditized in 1997, they (the ERP vendors) decided to move into the APS space

as it was perceived to be hotter! For example, note PeopleSoft's acquisition of Red Pepper (which at the time was earth-shattering news but became a non-event), the on-off-on-off relationships between Manugistics and i2 with Oracle and SAP, SAP's move with APO, and the other smaller acquisitions such as Baan and CAPS Logistics (transportation planning) and PeopleSoft and Distinction (Microsoft Access-based low-end APS) and so on. Basically, ERP and CRM are about to fight it out at the APS Coral! And CPFR is likely to be the first victim!

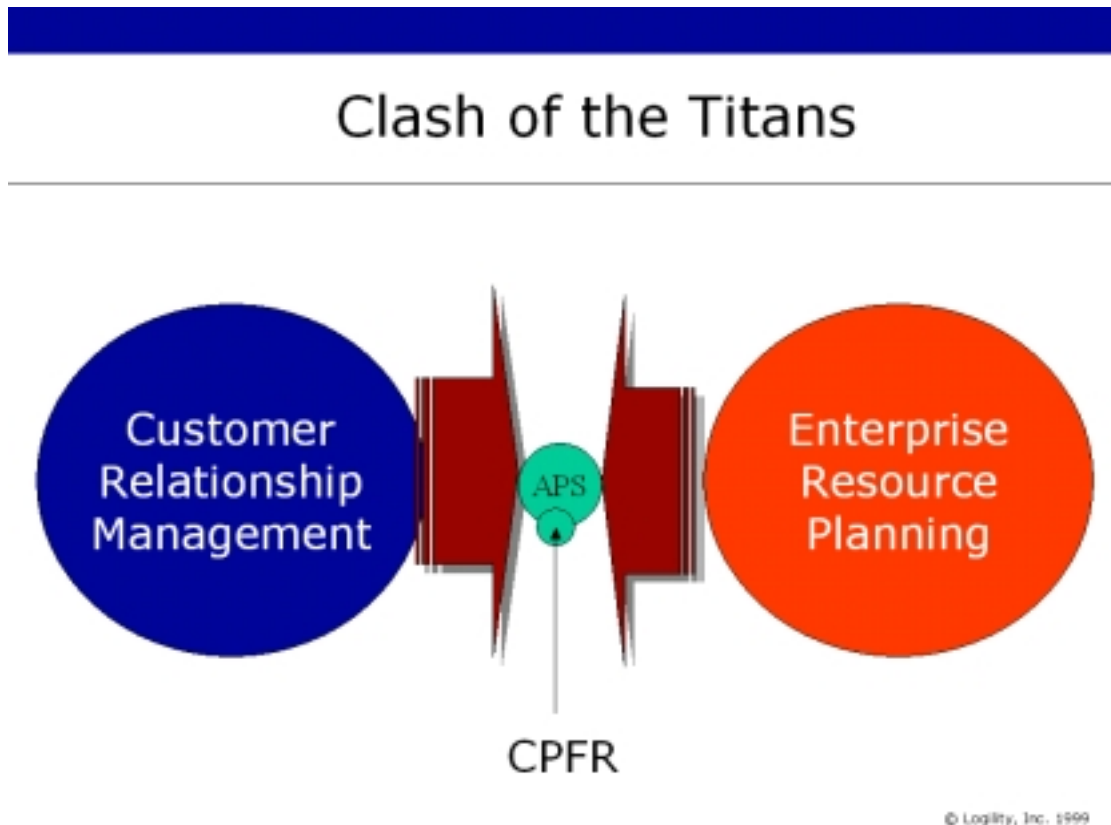


Figure 10: Clash of the Titans as ERP and CRM fight it out at the Collaborative Coral

Frankly, ERP "owns" APS in all but name but those ERP vendors do not understand CPFR. Interestingly, never once has any of them ever attended a CPFR Committee Meeting. And stranger still, several ERP vendors have added CPFR to their corporate messages and speaking presentations as if they are "visionary" when they have no product, and no collaborative customer experience.

CRM is attacking ERP and must do so to justify its existence. To CRM, ERP is old-hat and needs to re-invent itself in order to survive. ERP can never more be known as the thought leader. APS, SCM and "true" collaboration never really "made it" as ERP did, and they are about to get squeezed between the two titans. APS and CPFR are the high ground – the real differentiators of the Digiconomy as they provide for the only true way to change the relationships between customers and their suppliers.

As an aside, a search of the leading web sites for the phrase CPFR last month revealed some interesting counts. AltaVista had 2,870 hits on “CPFR” and InfoSeek 390. Yahoo, that golden child, had 2 hits – one of which referred to Carnivorous Plants and their Habitats! The Application vendors did not fare all that better either. SAP had 15 hits on CPFR, Oracle none! Both Siebel and Clarify also had none. PeopleSoft did have one hit! So is CPFR a flash in the pan? Is Oracle well prepared for the CPFR tornado?

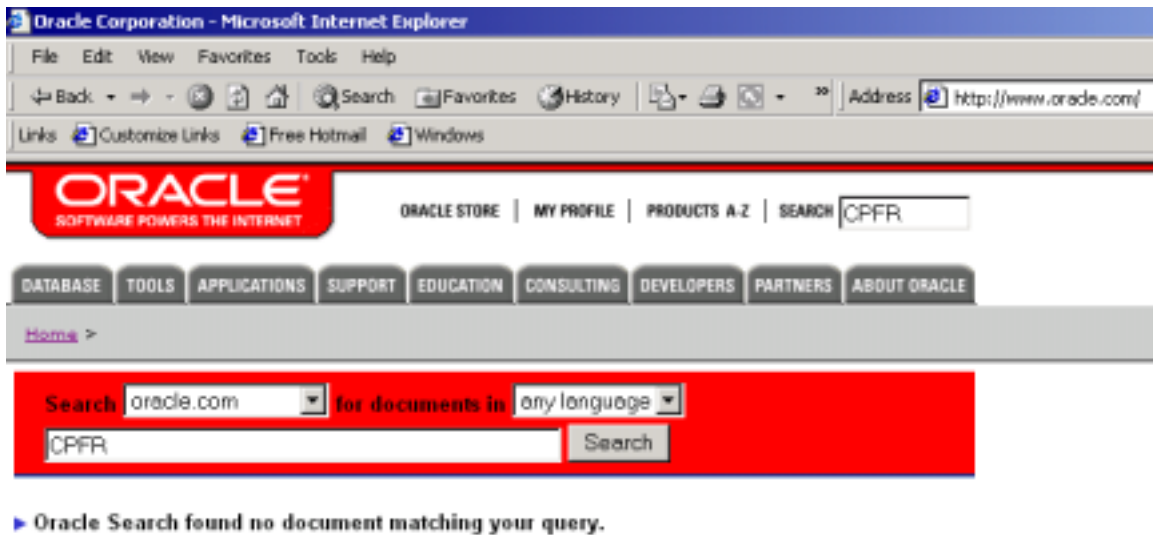


Figure 11: Oracle's website had ZERO hits for CPFR on Tuesday, December 7<sup>th</sup> 1999  
"Nothing like being prepared!"

CRM is likely to swallow CPFR as ERP is swallowing APS. CPFR is a customer-facing opportunity for companies so it is only natural for CRM to acquire it. Further, CPFR compliments a key segment of the CRM process – one that is not yet readily differentiated among the CRM vendors. Until now.

## **“The Life Cycle of the Customer Order now has an End Date”**

I asked a question to the AMR fall 1998 Conference in Boston. It was during the APS section that focuses on collaboration. Other sessions, including ERP and the newer CRM did not have a collaborative focus. Note that today all factions want to poach collaboration – as it is hotter than CRM and ERP and APS added together. The question I posed was this: “Due to the collaboration initiatives such as CPFR, the life cycle of the “Customer Order” now has an end-date – therefore what place CRM?”

It was one of those question times when you write it down on a card and it gets read out to the audience (if the moderator wants to). I was very surprised when I heard my question read! I was even more surprised when I heard the response given. Basically it was a non-answer. The respondent, an AMR Analyst, suggested that the question was in fact more than likely an “event” that would take place, but he could not articulate why the customer order would not be useful or the focal point of a relationship. After all this undoes 25 years of business and information technology. The audience was hushed for a moment as the question’s meaning began to sink in. I am not sure how many people really understood the importance of that moment.

Despite this very interesting response, and the fact that I realized that so few of my peers “got it” I waited with excitement the discussion that followed – that of Customer Relationship Management. I was excited as I understood that CPFR and true collaboration was the most forward-looking, new, innovative business model that focused on the customer AND the customer’s customer! Nothing else on the slate could claim this. Was this a portent of doom? Was this really the beginning of what Andrew Grove would call a “Strategic Inflection Point”?

So what is Customer Relationship Management? As I have already stated, its definition has changed and broadened over the last two years. A new concept 24 months ago, it is not a very real part of the now infamous AMR Annual Conference. Not to be outdone or left behind, AMR decided to follow the new pack of Internet-designed application vendors that focused on the customer –side of the business.

Taking a broad view, CRM is made of numerous components – all of which make the customer its focus. Here is a list of the more generalized features:

The basic foundation or elements in Customer Relationship Management are:

- Sales Management
- Field Service
- Customer Self Service
- Key Account Management
- Customer Service
- Brand Management
- Collaboration



# What is CRM?

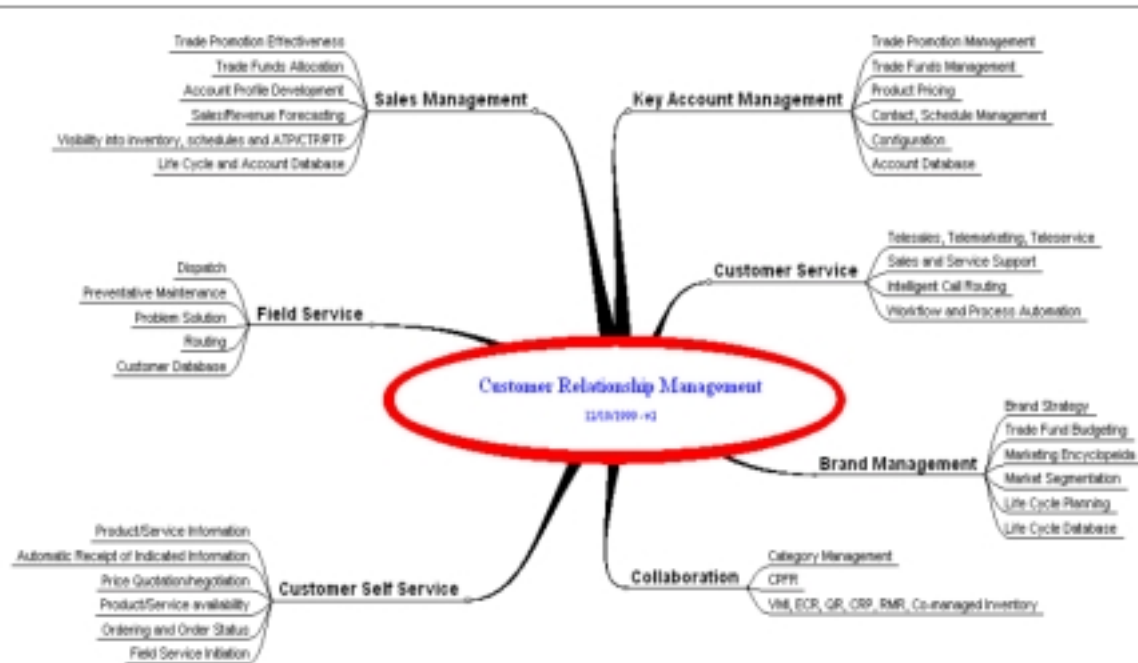


Figure 12: Elements of CRM

If one views CRM not as a set of applications but rather as one or more processes, we can group the elements into three stages:

The Stages of CRM:

- Find a Market
- Serve a Market (product and service)
- Manage a Market

The “find” stage contains all the elements and activities a company exploits when it seeks a market to operate in. When I say “market” here I mean market, industry and product mapping. So this is the very early, conceptual stage where market research is done and where the determination of the target customer and market is the objective.

The “serve” stage assumes that the former stage has delivered to the organization a real customer for it to serve in terms of its product and/or service. This stage therefore represents the operational side of CRM. Now that a relationship has been established, a product and/or service has to be traded. This middle stage is the “how” and method by which delivery is executed. It is this stage that today is less clearly understood by the so-called pioneers of CRM. However, the CRM vendors have a massive lead over ERP and ASP in the service side of the “serve the market”. Even after a product has been served, there may be numerous opportunities to serve

the customer with extended solutions at the point of satisfaction. For example, a service engineer can solve a customer problem and use the opportunity to appraise the customer of other solutions that might be useful to them. ERP and APS do not recognize this – and they do not for obvious reasons; this is an area in which CRM excels and other models do not recognize. Likewise, the auto-replenishment of product is an area that APS and now CPFR excel and CRM fails. Hence the assumption that CPFR fits more closely with CRM vendors that “get it” than with the ERP vendors who generally do not have a chance to “get it”.



Figure 13: CRM: Find, Serve and Manage a Market/Customer

The last stage of CRM is “manage”; where all the performance measures and Key Performance Indicators are brought to bear on the relationship to verify that both trading partners agree that a success has been achieved. This stage provides for a closed-loop approach so that feedback is provided to further enhance stage 1 and tune stage 2.

Stage 1 and 3 are today the essence of CRM in that software application vendors and consultants assume and therefore describe CRM as a singular process whereby a manufacturer (seller) seeks, finds, acquires a retailer (buyer) and supplies the product. However, little thought has yet gone into what happens when that same customer, or another customer, places a second order for the same product. Or a third order. Or a fourth. And what about the scenario when all customers order all products much of the time? This is the realm of the second stage of CRM. For CRM to describe and offer a complete, end-to-end solution, this stage needs to be at the

core of CRM. Indeed, a competitive CRM solution will make this the focal point of its differentiating product. The reason for this is C.P.F.R.

Lastly, it is more than likely that other CRM vendors or analysts will call this space by another name. CRM is perhaps too limiting. Others may call this Customer Service – period. In my previous model described above, this is Demand Chain Management – all the demand chain (customer focused) activities that you do in the planning, execution and measurement models. Clearly this is too simple for most consultants – so you can expect more complicated models from them.

### Customer Relationship Management and CPFR

The following graphic describes a very typical relationship between a manufacturer and a retailer. It models a discussion that would have taken place between visionary companies perhaps 6 years ago and by many other companies today.

Basically the manufacturer has a new product for which they are trying to find a customer and a market for (stage 1 CRM). In acquiring a market and customers, the manufacturer now seeks to promote its products at the expense of its competitor's product. This very predictable move is often tied to or driven by the numbers game where a company is seeking to grow and meet its financial targets. Then delivery may become an issue. Often times a manufacturer's promotion strategy may not reflect supply capacity so either the plant gets screwed up since it cannot actually produce in quantities now sold, or inventory is built up, thus reducing the plant's profits.



Figure 14: Typical Trading Partner Relationship pre APS, VMI etc,

The straw that breaks the camel's back is that despite all this, the customer may change their mind. Since the customer is king, this is a potentially massive ramification for the overall value chain performance. To improve the performance, the partners agreed to try something new. A number of years ago, Vendor Managed Inventory was new. VMI is all about continuous replenishment. It's about a process whereby a supplier takes on the responsibility to maintain on an operational basis the service level and delivery of products at a customer location. Many companies in numerous segments have done this and it is often part of similar initiatives with different names. For example, Efficient Consumer Response (grocery) has a component called Efficient Replenishment that is very similar to VMI.

The scenario looks slightly different, as shown below. Despite the best will in the world and effort expended, VMI met with partial success. There certainly are successful implementations published and in place today but the vast majority of VMI or VMI-type implementations did not produce the results that were expected. Further, some of the characteristics of VMI now seem more like risks or constraints:

- Supplier does all the work
- Fixed Relationship / One Size Fits All
- No Exception Management
- Batch Model
- Requires EDI

Eight years ago these were accepted characteristics. Today they are the reasons why VMI did not work. In the bulk of cases and until very recently, it was determined that the manufacturer or supplier did all the calculation work necessary for the replenishment process to take place. This meant that the customer or retailer had to share some data with the supplier that had not previously been shared – which was a major change to the way businesses had operated in the past. This is where EDI came in. EDI was an efficient tool to use when companies wanted to share large amounts of static data between themselves – typically overnight, daily, or on a scheduled, batch schedule. EDI also provided a neat way to standardize on the data format.



Figure 15: Relationships moved on with VMI...just. Or did they?

Again, VMI did not allow for much flexibility in the way trading partners approached each other. All trading partner structures were to follow the same, rigid model. Sold as a strength (standardization) this concept did not recognize that not all trading partner relationships are the same – nor are any two companies alike. Therefore configurable structures were needed. VMI did not support this.

Lastly, the supplier or manufacturer did most of the work. As the “engine driver” the supplier was responsible for serving the customer warehouse, DC or store. When exceptions took place in the real world, such as a late delivery, a quality problem in the plant, a supplier letdown etc. the manufacturer was left trying to resolve the problem. There would always have been some work or assistance the customer could have given to the resolution process but there was no way in which the customer could have been notified of the exception in a timely manner. Exception management was non-existent at worst and limited to the supplier-side at best.

Collaborative Planning, Forecasting and Replenishment (CPFR) was designed to take these VMI weaknesses and replace them with strengths.



Figure 16: Here you see Collaborative Planning has now replaced VMI as the heart of stage 2 CRM.

This section has an interesting title: The Life Cycle of the Customer Order now has an end date. Is this an argumentative statement or part of our future? This paper portends the end of the Customer's Order as we know it. CPFR as an industry initiative is very attractive and visionary, but true collaboration or "the joint derivation of business information" raises major challenges to how companies operate today.

### Summary – and the future of CRM and CPFR

In the last 12 months I have heard of several very senior executives at the largest US-based ERP companies argue for the value of a forecast versus a customer order. This is a very key point in that these large ERP vendors make their living selling solutions that manage customer orders. The point that CPFR raises is this. If one spends enough energy on the up-front business process that results in stage 2 CRM, that of servicing the relationship and delivering product, the actual focus on the customer order / purchase order becomes much less a key business issue and more a simple (financial and legal) transaction. The potential is that that entire heavy overhead we just added to those bloated ERP systems perhaps, just perhaps, may be redundant in the Digiconomy! The impact of this is staggering. Simply put, many companies today are bloated with big, client/server ERP systems with complex order processing and management solutions. These systems are not designed to act as a gateway to collaboration, rather they will inhibit at best and prevent at worst (true) collaboration from taking hold. In this case, why spend millions of dollars on implementing them?

Rather than just being white-paper-talk, what does the real world say about this? In the case of the early adopters of CPFR, this is exactly what has been observed. With CPFR, sales reps of a manufacturer or distributor no longer have to spend much of their time on order taking, order making, expediting delivery, apologizing for late delivery and worrying about shipments into the customer warehouse. Their job changes significantly because these traditional problems are now resolved and reduced. Being very creative, the sales people may have more time on their hands to work with their customers' sales forces to develop more business for their products further down the value chain. The principle being: Why automate sales processes that will no longer be needed? This means that CRM as we know it today will have to evolve to reflect this new process. Again, there are too few visionaries that understand this at this time.

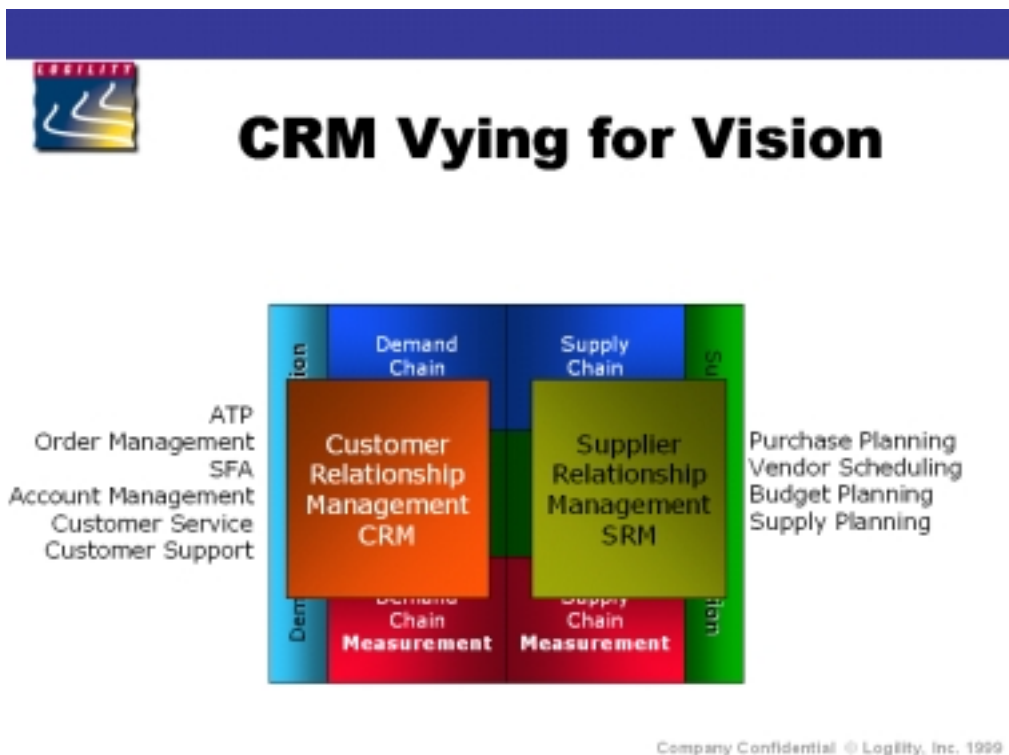


Figure 17: CRM's final resting place – the elimination of ERP and "ownership" of Collaboration; note Sales Force Automation is now extended to include various collaboration models and Available to Promise (ATP).

Today CRM has matured into a new software application segment that is subsuming all aspects of a business that "touch" the customer. The next battle, recognized by AMR and GartnerGroup and a few software professionals is the land-grab effort underway between CRM, ERP and APS (read SCM). ERP is the mainstay, the work-horse, and the foundation. ERP is where companies have focused millions of dollars investment over the last 15 years. ERP is the current "flavor" that evolved from MRP, which, back in the 1970's managed our factories.

There is also an interesting discussion to be had over the general concept that CPFR is pioneering. If CPFR can bring a buyer and a seller together, what next? Basically there are several ways in which CPFR may evolve:

- Width: CPFR will be, and is being, widened to include additional processes and parties that are impacted by the replenishment processes between trading partners. The example most well known is Collaborative Transportation Management, or CTM. I call this 3-way CPFR as there are now three trading partners involved in the model;
- Depth: Other business processes that operate between the same trading partners will evolve that are (truly) collaborative in nature such as Product Design and Promotion Planning. The product design efforts will be particularly difficult to standardize and hence market, as this is very different between industries. CPFR now addresses a set of identified common problems between most trading companies in most industries;
- Horizontal Deployment: CPFR will be adopted more widely across the retail/manufacturing base;
- Vertical deployment: CPFR will be deployed “further back” in the value chain between raw material suppliers and manufacturers, possibly with the inclusion of the carriers for a 3-way CPFR model;
- Virtual CPFR: the **most** exciting possibility is that three or more layers of a value chain may get together to collaborate – in a virtual value chain. In this sense an **n-way CPFR** model is envisioned where real time data flows between all trading partners. For example, real-time data describing consumer demand is now shared across the whole value chain and the net response, the forecast and replenishment plan, is collaborated on and synchronized real time from consumer to raw material supplier. Further, such a deployment and evolution would create significant barriers between competing *value* chains as few and fewer real “strategic” relations can be forged. Companies who are late coming to this realization will find themselves “frozen” out of the Value Chain. This is the end game. This is the goal of end-to-end real time integration and collaboration.



## n-Way CPFR extends the original model

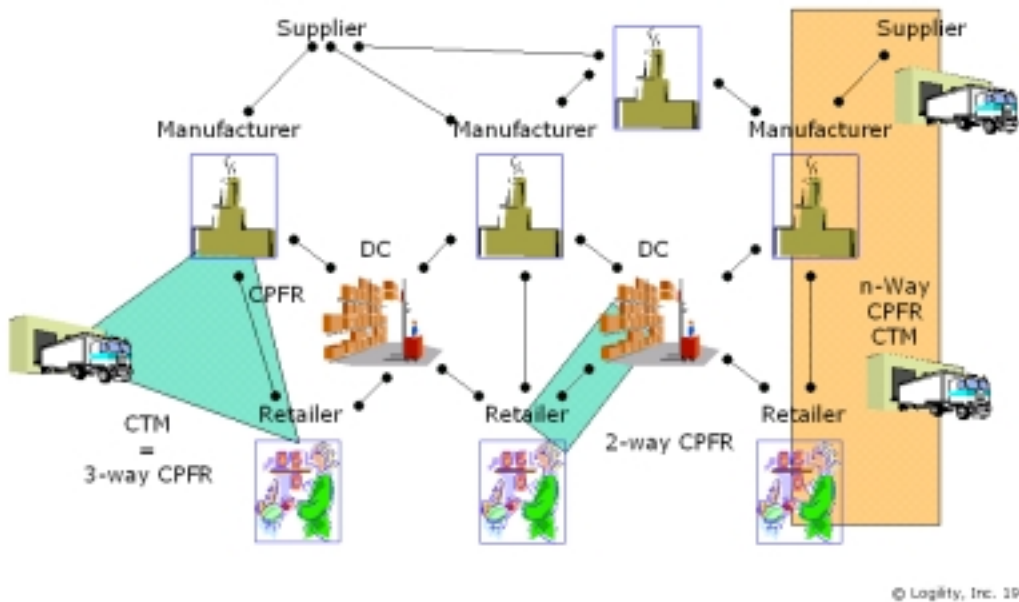


Figure 18: CPFR and its evolution

In Figure 18 above we can see highlighted three concepts: 2-way CPFR (as it was originally conceived); 3-way CPFR (called CTM) where the carrier between trading partners is now involved in the process; and n-way CPFR (on the right) where multiple layers of the value chain are now included. This is probably the most exciting development in CPFR to date. Little is written on this concept, but I forecast that this will be the major focus of the visionaries over the next few years.

Lastly I have one facetious other question. If one creates "Customer Relationship Management", should this not imply "Supplier Relationship Management"? If we have a customer relationship process why should we not have a supplier relationship management process? Otherwise what would CRM integrate to? Surely the suppliers are just as critical as the customers in order to succeed and win! I would expect that some vendor would introduce some time in 2000 an SRM solution. Perhaps the ERP guys will re-badge their wares as SRM tools. To make things simple, we could argue that with CRM, SRM and Financials, ERP is dead.