n-tier CPFR®

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Andrew White, Logility, Inc.

Introduction

This paper will look beyond today's interest in Collaborative Commerce and CPFR, and discuss the likely adaptations to the model itself, and how such adaptations will facilitate value chain behavior changes. This paper will not be taking a detailed look at CPFR itself as this was covered elsewhere and can be reviewed at www.cpfr.org. It will outline the precepts that drive behavior, and how CPFR plays on that behavior. It will conclude with a forecast on how CPFR will evolve to support more interactive, dynamic, and adaptive value chains.

Supply Chain Management – then and now

When the phrase "Supply Chain Management" came into vogue, most participants assumed that the "supply chain" as a concept was reasonably well understood. The idea was that there were "end consumers" who needed to be served, who in turn had retail suppliers, who in turn bought from, or worked with distributors, wholesalers and manufacturers. Manufacturers acquired materials from raw material suppliers – and throughout this logical sequence, or chain, logistics and transportation companies enabled the physical movements of materials and products. "Best practice" information sharing peaked with Electronic Data Interchange (EDI) enabling some kind of Efficient Consumer Response (ECR) or Vendor Managed Inventory (VMI) program. To some, this was the "old economy".

However, the so-called "new economy" has dawned, and it has brought with it numerous changes that have sought to challenge the cherished understanding of what has gone on before in Supply Chain Management. Some of the major changes relate to the use of the Internet, and some relate to the increased shift in power from seller to buyer. Most industries have been impacted by Net Markets as centralizing agents that seek to facilitate greater or more efficient buyer and selling.

Some of these Net Markets are focused buyer needs, some on supplier needs, and some are more horizontal in nature and focus on services across buyer-seller lines of operations, such as transportation. Portals, acting as enterprise gateways to all stake holders of an organization, are back in vogue. They were popular 2 years ago, then they took a hit with the "dot.com" crash, and again they are back again – now in the form of private extranets.

And then we had disintermediation – the process by which a seller bypasses their traditional buyer in order to service that buyer's customer directly. This disruptive process was heralded as the New Order in the early days of B2B, but then it seemed that it would be less of an impact as the costs to the seller to deliver more and fewer units to consumers was prohibitive. However, whenever a manufacturer can develop such a profitable strategy, you can bet that you will see disintermediation take place.

It is basic Darwin at work! And then we have the old economy stalwarts that still think that B2B will be driven by Electronic Data Interchange, or EDI. For sure EDI will play a part, but it will be an ever decreasing part as the use of XML continues to increase.

From Supply Chain to Value Chain

The last major shift, that is in reality a very old idea reborn, is that of the "Value Chain" or "Value Web". Any company seeks strategic partners – and in today's highly competitive industries partnerships are needed more than ever before. But what defines a real partnership and how can you create a fertile environment for such "marriages" to succeed? This is the vision of Value Chain Management – the creation or alignment of several buyers and sellers who work together almost as "one", in order to dominate their market, and beat out competing and like-minded value chains. In other words, competition is shifting away from "my company versus your company" and moving to, "my value chain versus your value chain". This last shift is the realm of n-tier CPFR and multi-level value chain collaboration.

The tendency to partner is predicated on the understanding that it provides benefit to the agents involved. We should not assume that benefits are accrued simultaneously or in equal shares. If the agents do not perceive benefit at some point, the marriage will be doomed to divorce! The B2B new economy cycle began almost two years ago, was marked with a belief, albeit for a short time, that groups of buyers and sellers would band together, even those that treated each other as mortal enemies, for the greater good of the industry! This "public" model is what depicts the central theory of Net Markets: as the feudal market was a gathering of sellers and buyers, many of them competitors, and trade was transacted openly and visibly. The stock market is the 'mother' of all Net Markets! However, this very public model flew in the face of normal competitive and Darwinian theory and it has undergone substantial change in the last 18 months.

Characteristics of a "Public", centralizing Net Market model:

1. Public, and Many-to-Many
2. Price is the Primary Decision Driver
3. Products are not generally differentiated (not branded)
4. Fulfillment tends to an homogenous process
5. Exploits the status quo of "ERP to ERP"
6. Self-service based
7. Context level activities

The characteristics of a "Private", distributed net market model are:

1. Private, and one-to-few
2. Customer service and other features are as or more important than price
3. Products or services are highly differentiated, even complex
4. Fulfillment remains a key element of competitive differentiation
5. Disrupts the status quo of ERP
6. Exception based
7. Core level activities

It turns out that the sensible approach has surfaced. Companies are not in the business of advertising to their mortal enemies the form and nature of their strategic initiatives. Therefore the business processes that reside on a centralizing model are now shifting from core process that contributes to competitive differentiation, as competitors could leverage your investment and replicate the same processes easily. Competition is all about seeking innovative activities that are hard for the competition to replicate! Therefore private constructs are now where the major management focus and IT investments are directed. Multi-tiered collaboration, and n-tier CPFR, are good examples of extended business models that seek highly competitive constructs – and therefore it is unlikely that these will evolve and persist in a public forum. The one type of company that will support such core business processes on a public forum is the smaller organization that are unable to sustain private constructs – that require extranets and so on.

Industry analysts are now firmly in the court of the "private" advocates. Two years ago all the analysts, including the vaunted AMR, praised public models and dynamic pricing as the future of Supply Chain. GartnerGroup as well as Logility, and a few other organizations, realized ahead of the curve, that private would be the main battle ground. However, the "end game" will not reside in private-only arrangements. Companies need access to both private and public constructs. "Private and Public forums are today built on completely incompatible technology frameworks ERP does not even figure in the picture – so what technology framework will serve the longer term needs of the industry?" To answer this, one only has to look at the behavior of companies – and apply rational competitive and game theory.

Competition and Behavior

With the focus now on private constructs between a company and its partners, there has been a false perception that this implies proprietary technology that then acts as a barrier to interoperability. As networks grow there must be a natural barrier between the technology on each extranet that prohibits or at least makes costly the work to integrate them. This is the world of industry standards and where EDI has failed miserably in delivering such standards. In fact with respect to CPFR specifically, the global standards recently approved and supported by some of the largest consumer goods retailers and manufacturers the world over virtually eliminate that historical concern!

What we envisage is that networks will continue to form and reform. Dell has an extranet, as does HP, Cisco, Intel and Compaq. These represent a series of one-to-many extranets or networks that have overlapping membership – and in some cases competing members. We have to assume that many companies in all the networks have different computer systems and yet they have to interoperate. Competitive forces will drive these networks to align and realign over and over again. The problem is that if we just think of EDI, or even XML, without the use of global standards, then the cost to interoperate between alternative networks is high. In economic sense, there is a cost barrier to switching between networks.

If you were a mid-market supplier to a fragmented customer base, the cost of connecting tightly with many partners can be very high. This is because there might be unique platforms, protocols or even EDI formats to integrate with. The XML standards now available lessen this issue. The idea is that Wal*Mart can trade these standard XML documents with P&G, or with a mid-market manufacturer. The files shared would be the same!

Much of the work at the VICS CPFR committee over the last year has been focused on the technical standards for Net Market interoperability. This was to meet the needs of Transora, World Wide Retail Exchange, and GNX. However, it would seem that those same XML documents that facilitate exchange-to-exchange (X2X) support peer-to-peer (P2P) CPFR – that is, one extranet connected to another. This means that there is little need to use a centralizing net market model! With these global standards, you literally "connect once, connect all" – if all the partners use the standard. This dramatically reduces the cost of connecting to all the partners directly and was one of the main so-called benefits of doing CPFR on a net market. For sure it will not be that simple, but the cost trade off analysis has significantly shifted away from the assumption that Net Markets were built on.

So, with the global standards in place, this reduces the switching costs for members of these networks, and so Darwinian behavior is "greased" and normal competitive moves will take the ascendancy. They will not be held back by IT arguments, despite what the Net Market operators will say. So these networks led by the likes of Dell, HP and Cicso can be viewed not as independent, disconnected hub-and-spoke extranets, but as a series of overlaid Peer-to-peer networks! This is the model for competitive behavior in any value chain in the new economy.

Value chains are self organizing systems. The government has created an economic framework, but there is no conductor telling which company to serve what company, and no road map read by CEO's to tell them what they should and should not do. Profit drives investment and competitive differentiation is how companies win. These "truths" are the DNA of the value chain – and when benefit can be shared through mutual effort, and then partnerships will evolve. And when there is a better deal on the table, those partnerships will break up and re-form elsewhere. Ford and Bridgestone was a marriage that lasted 99 years. Who could have guessed that they would not have been celebrating their hundredth?

The Road beyond CPFR – Extensions to CPFR

The effort that has gone into developing the technical standards for "interoperable CPFR" for the Net Markets will in fact completely unhinge the Net Market model as it relates to CPFR for strategic competitive advantage. It will facilitate information interoperability between private extranets on a scale that has not hitherto been seen in any B2B way, and will far outstrip the EDI supporter's dreams for interoperability. But CPFR is not an information standard; it is a business process standard. It is a business process that seeks to change the "transaction and hence the nature of the relationship between buyer and seller."

As a 9-step business model it has taken "best practice" to a new level. All the preceding business practices that were grown from the ashes of the EDI movement are being conceptually blown away by a truly collaborative business model that has known nothing like it before. There are many industry initiatives that sought a win/win result that did not have at their heart true collaboration. Such initiatives include but are not limited to:

- Vendor Managed Inventory (VMI)
- Efficient Consumer Response (ECR)

- Quick Response (QR)
- Supplier Managed Inventory (SMI)
- Continuous Replenishment Planning (CRP)
- And so on.

The early adopters and thought leaders of CPFR have long realized that CPFR is just the start of a long and exciting journey. The model itself is often misunderstood by some, but CPFR is not a new idea. It has a very simple premise at its heart: when two companies are guessing what the other is doing, why not work together?" It is a simple thought – but one that is the root of CPFR. For that reason, the 9-step model can be and has been applied to more than the industry segments for which it was originally developed. For good reason, Gartner Group coined "Collaborative Commerce" to describe the "next wave" in supply chain management!

CPFR and other Industry Initiatives

CPFR grew from the poor performance of a VMI program in the consumer goods retail/manufacturer value chain. However, CPFR has also been applied to many other areas, both horizontal and vertical. In fact, the natural evolution of CPFR is likely to follow this sort of path:

- Hosted deployments for centralized, net market offerings for pilots, and mid-market and below CPFR deployment;

- Growth in Peer-to-Peer based CPFR between sizable companies with extranets;

- Horizontal model extensions that include such things as Collaborative Transportation Management (CTM), Collaborative Event Management, (CEM), and so on, and

- Vertical model extensions that include such things as n-tier CPFR.

Despite the arguments set in this paper, the Net Markets will succeed for a while at launching CPFR programs. But even now the larger members of such centralizing agents are already building out their extranets with CPFR technology to ensure that they are "insulated" from the Net Market struggles, but also to facilitate direct, very private, strategic relationships with their most important partners!

As hosted or centralized CPFR gives way to P2P-based CPFR, then the actual model itself will undergo changes. We are seeing this today in isolated innovations as individual implementations learn from the CPFR implementation, and expand the collaborative framework.

Early efforts to extend CPFR include Collaborative Transportation Management (CTM), and Collaborative Event Management (CEM). CTM is in fact today a separate VICS initiative that seeks to extend or more correctly, "complete" step 9 of CPFR that ends in an order between buyer and seller. In the real world, there are many "orders" between buyer and seller and the world of transportation has its own foibles and constraints that offer a huge opportunity to extend the collaborative framework to that of carriers and shippers.

CEM is a newer area that is likely to develop standard revisions to the base CPFR – perhaps more as an add-on, since not all buyer/seller relationships have a central focus on promotions. CEM seeks to deepen or fill-out the gaps in the CPFR model so that buyer and seller can more formally collaborate on events such as promotions, product launches etc, in a standard, repeatable manner. Both CTM and CEM are examples of horizontal extensions to CPFR in that the basic model still operates at the same level of the value chain.

CPFR for Raw Material Suppliers and Manufacturers

There are some differences between CPFR at the retail level and at the raw material level – just as there are similarities. For example, in both cases there is a lot of guess work about the partner activity and a lot of sales people and buyers hired to try to align that activity. The differences might fall into several different areas:

- Information collaborated on
- Sourcing strategy
- Timeliness

As you look at the raw material end of the value chain, collaboration could start at the capacity level – since buyers seek to secure capacity, and sellers want to optimize their internal plans and so collaboration on a higher level than traditional CPFR makes sense. Over time, perhaps via some planning horizon, these capacity collaborations are converted into product mix collaborations, and ultimately, actual product collaborations. This is in stark contrast to retail/manufacturer CPFR where the process focuses on product and simply aggregates according product hierarchies – such as brand, category, and department and so on.

Manufacturers seek to sell highly differentiated products to retailers and consumers. This branding effort is much harder and rare when you approach the raw material end of the value chain. This is because a consumer goods or food manufacturer might acquire commodity ingredients and then sell on a branded food. CPFR is not a procurement planning model for commodities: that is the playground for e-Procurement systems and centralizing net markets! So the applicability of CPFR the further back you go can be questioned. However, for those suppliers that seek to further differentiate themselves in a highly fragmented market, CPFR might be a great approach to "get the attention" of the customer.

Also, tied to the capacity argument outlined above, the time focus can be different with the back end of the value chain. Occasionally the lead times can be extraordinarily long compared to final assembly through the consumer retail channel; sometimes it can be the opposite. The point is not the specific example, it is more to the point that it might significantly change.

CPFR and some of its horizontal cousins will be implemented further along the value chain so that raw material suppliers and packaging suppliers will seek to do CPFR, or aspects of it, with their main customers – the manufacturers, who themselves will be doing CPFR with their customers. It was this natural conclusion that led Logility to suggest the formation of the n-tier CPFR business model. The concept was again simple: instead of each buyer/seller layer in a value chain developing in isolation deep, rich, collaborative frameworks based on CPFR, would there be value in defining a business model that explicitly recognizes the multiple stake holders in the value chain? The answer is a resounding "yes!" but the opportunities to achieve this level of information and business process integration will be extremely rare! This is not for the mass market. This model will be for those dominant gorillas and "wanna-be" gorillas that seek to create a value channel that acts as one organization. This is the Wal*Mart model, at least when it was so clearly and visibly the dominant leader.

The Holy Grail of Supply Chain Management: Multi-tiered Value Chain

Vertical extensions of CPFR are perhaps the future of B2B and value webs. Multi-tiered or n-tier CPFR strikes at the very heart of what supply chain leaders have sought for many years. It is perhaps the hardest business model to seek, but it also offers the greatest return on that effort.

Some of the early work at VICS has focused on the convoluted 3-way partnerships of the retail/distribution/manufacturer model – prevalent in the food industry. This industry is managed according to some very old rules that have for too long gone unchallenged. The margins are razor thin and so deals and activities undertaken by individual agents are predominant, since there has been little proof or opportunity to work for any extended period with a partner.

The logic has been, although it is not stated as such, "If I as a company can make more money with short term deals and diverter activity than through ignoring these opportunities and working somehow with partners, why bother?" With ECR and so on, this was a valid concern. With CPFR, this is a non-issue. The whole point is that CPFR will assist those companies in finding out where the value lies in mutual cooperation. CPFR is not a panacea – it will not eradicate these very normal, selfish activities. But for a few companies, those willing to invest, it will provide a fertile ground that will in time provide greater benefit than any series of "one-night stands" or transactions – that represent "best practice" particularly in the food industry today.

Summary

CPFR as a business process has advanced the theory of Supply Chain Management – perhaps in a more far reaching and disruptive manner than the originators ever considered. What is most important about CPFR is that it mirrors and supports the natural behavior of companies as they continue to seek competitive differentiation in order to survive and later dominate in their respective markets. CPFR is adaptable – it can and is being applied to many different stages of the value chain, even up to raw materials procurement. It is evolving and expanding now to include transportation and event management.

The Darwinian forces that exist in the consumer goods value chain, and in fact in any other, ensure that there will be a series of large companies that seek to transaction their core business via their own extranets powered by private CPFR constructs. These will interoperate with other CPFR-powered extranets and so the technical barriers to this level of integration are significantly lower. This argument has been missed by many Net Market operators who have their head in the sand and have missed the trend. The result will be a lattice work of Peer-to-Peer based extranets all supporting the same global XML standards for CPFR.

Net Market, centralized, or hosted CPFR will devolve to the mid-market and below. Smaller companies that are unable to unwilling to build out their extranet will pay to use the "common" platform that is used by their mortal enemies. Any extensions applied will naturally be available to their competitors, and so this will be a public model with private elements. The smartest CIO's are building CPFR on their extranets – and not telling the market!

CPFR is the first of a new wave of truly B2B based business models. CPFR is not reliant on ERP. It is not an ERP model. We call CPFR the "2 in B2B" since it is the first of many "shared business processes". ERP is not a shared business processes – it is an enterprise model. The P2P deployment model for CPFR will respect Darwinian forces and in fact result in highly connected value webs. This connectedness and ability to join and leave networks will facilitate more fluid value chain communication, and will not undermine the value of deep, rich, collaborative frameworks. Over time, we shall see the development additional B2B business models. They will in time yield to the adaptive Peer-to-Peer value chain.

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