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Collaborative Planning in eMarkets - DRAFT

ABSTRACT

Industrial competition is advancing from being between individual companies, to being between clusters of tightly-knit partners. The focus is to deliver to the customer the desired product within a fitting time-frame, at the right price. Companies are progressing from the notion of the extended supply chain and supply networks into eSupply networks facilitated by electronic B2B marketplaces, or eMarkets. These support information sharing, transaction execution and collaborative processes in an environment of constant change. Employing Collaborative Planning within eMarkets and operating as though one seamless organisation, synchronised to meet customer demand, such value-added communities can achieve significant cost savings and service enhancements. This article will provide an overview of collaborative planning relationships and processes within eMarkets among multiple trading partners. Based on the contemporary business developments transformed by the internet, we will describe the processes that define inter-organisational collaboration and that take place in bilateral and multilateral relationships between partners. We will expose how eMarkets are deploying supply chain planning applications that bind firms through information-sharing, interdependent transactions and collaborative processes. Then we describe the collaborative planning processes that may take place within an eMarket. Finally, we will present some of the benefits of implementing collaborative planning that go beyond the largely descriptive and anecdotal presentation of the advantages of eBusiness from popular literature and the press.

INTRODUCTION

The current global environment, marked by increased demand, decreased customer loyalty, shorter product life-cycles, and mass product customisation, forces companies to lower costs while increasing the quality and variety of products and services. In order to be able to meet these challenges, companies are extending their value-chains by co-operating with organisations whose complementary capabilities can give the whole business network a competitive edge.

Markets once favoured competitors that could successfully integrate massive horizontal or vertical asset bases to create economies of scale. The rise of Business-to-Business (B2B) commerce over the internet is accelerating a shift away from this strategy. The ability to integrate more easily and more often with other businesses for collaboration and co-operation will remove many of the traditional advantages of large asset-based competitors. The need to better integrate with customers and suppliers compels businesses to dramatically alter their processes in order to survive. As the cost and latency or friction is removed from B2B transactions, companies will be more willing to consider outsourcing what were once core business processes, thus finding themselves participants in multicompany business processes. Consequently, many companies are currently disassembling their process infrastructures into independent processes and then reassembling them as parts of an extended supply network[1]. This is done via outsourcing and collaborative partnerships thus allowing the organisation to concentrate on their core competencies and process capabilities. This kind of partnering may also mean working collaboratively to share production, demand, capacity or product information in order to synchronise business behaviours across a supply network.

The emergence of eSupply Networks

The advent of the internet as a universal communications platform extends even further a company's reach, and enables richer information exchange among collaborative networks of partners. Companies must be flexible and agile, and able to react quickly with minimal effort and expense. Agility can be greatly increased by improving the ability to detect problems, and opportunities, giving the organisation and its partners more time to react. Innovative companies are using current advances in information technology, like Enterprise Resource Planning systems (ERP), Customer Relationship Management systems (CRM) and Advanced Planning and Scheduling systems (APS). They are utilising common communication, security and process standards, to expand their networking

capabilities and to transform the nature of their operations. They are pursuing narrower control by reconfiguring their supply chains, focusing on core competencies that add value to the supply network, and leveraging skills and information technology to connect and co-ordinate processes among their trading partners in real time.

These developments are transforming sequential, enterprise-centric supply chains (in which an enterprise drives multiple processes), into synchronised electronically connected business networks, (where one process drives multiple enterprises). eSupply networks may be established either via direct B2B interfaces or via a new breed of B2B marketplaces, eMarkets, which facilitate information sharing, transaction execution and collaborative processes. Such cohesive business networks are confronted by significant challenges. They have to be able to:

- Take orders over the web, or automatically via an eMarket;
- Offer rich product selection and/or the ability to customise;
- Source the order and commit to delivery, immediately, online;
- Service the order online, including changes and inquiries;
- Establish data and transaction standards and ensure the currency of data content;
- Deliver product quickly, efficiently, and profitably;
- Operate in a world of short product life cycles;
- Be in constant communication with customers and suppliers to respond quickly to “pull signals” to manage inventories, adapt quickly and economically to changes in demand/supply, and operate with low inventories.

These challenges require that partnering companies use collaborative planning to achieve objectives within the internal, as well as the up- and downstream domains of the supply network. Application integration, together with internet connectivity enables real-time communication and advanced planning functionality across multiple enterprises, to optimise resource allocation and synchronise information and product flow.

Table 1: Summary of objectives and challenges facing a company in eSupply Networks

Upstream Objectives	Internal Objectives	Downstream Objectives
• Shorten time to market - through collaborative engineering, outsourcing, and contract manufacturing • Provide convenient purchasing via direct web-based sales, online catalogues • Enhance selection through customisation or configurable products • Improve response by order promising, order tracking, event notification and fast delivery.	• Provide visibility of information – inventories, forecasts, orders, plans, engineering changes, kpis. • Synchronise activities – optimised feasible plans, pull-based triggers • Promote responsiveness - reduce time to detect demand, commit, produce, fulfil • Achieve process simplification - by automating routine process steps • Leverage market mechanisms - Aggregate buying power, use auction-based buying/selling via trade exchanges.	• Replace inventory with information (inventory visibility, forecast end-of-chain demand, collaborate with channel / customer), • Shorter planning / replenishment cycles (automated planning process, collaboration with suppliers, rate based planning), • Reduce lead times (through supplier collaboration, “pull” replenishment / VMI and build to order/ postponement), • Improve synchronisation (by generating feasible, optimised plans & schedules, replan when conditions change), • Provide order status and traceability • Use internal and external performance metrics.

COLLABORATIVE PLANNING IN ESUPPLY NETWORKS

Collaborative Planning is the use of internet connectivity to enable real-time communication and advanced planning functionality across multiple enterprises to synchronise information and product flow, in order to optimise resource allocation and minimise costs. It can help to reduce inventory across enterprises, maximise network capacity utilisation, improve service levels, shorten planning cycles, pull rather than push products, identify critical supply issues, and introduce sophistication and clarity into the process. Collaboration with upstream and downstream partners can take many forms, including mass customisation to joint product development, shared forecasts, and co-location or other managed inventory practices. As can be seen, this changes the nature of the relationship and hence the transaction between trading partners. Instead of buyer/seller relationships we have collaborative relationships.Instead of customer and purchase orders we have collaborative forecasts and replenishment orders.

Collaborative Planning may take place either via B2B or B2M2B collaborative scenarios. Companies may view collaboration as a means to synchronise and optimize supply chain operations, particularly with regard to strategic, tactical, and operational planning processes. Many companies have used technology to speed up operational and financial transactions with trading partners using EDI, extranets, and more recently, eMarkets. This coincides with the increasing automation of internal processes, which is necessary to conduct B2B commerce. Furthermore, many internal production and distribution processes like MPS, MRP, and DRP are moving outside the boundaries of the firm; an example being Vendor Managed Inventory. The goal of these optimisation and integration efforts, is to provide functionality, such as:

- Real time communication, including business logic, where each event is monitored by alerting systems, for real time transactional data, and decision support information about customers and orders.
- Shared resource allocation, document generation, and profitability monitoring.
- Deliver to requirement, where rates and routes are chosen accurately and dynamically, giving delivery time in hours and minutes.

Collaborative Planning Relationships through eMarkets

eMarket-enabled business relationships often involve the automation of various aspects within a buyer/seller or trading relationship. Contemporary implementations of inter-organisational partnerships focus on enabling B2B planning, especially via Consortium or Private eMarkets[2]. All collaborative relationships involve some sort of joint planning and plan execution. While there are myriad aspects within a collaborative planning relationship among trading partners in an e-supply network, three broad eMarket information-processing categories have been identified:

Table 2: Summary of objectives and challenges facing a company in eSupply Networks

Information-Sharing	Integrative or Transactional	Collaborative
Information-Sharing relationships mean that partners are given access to an area of an eMarket that has the shared information in it, or one partner transmits shared information to the other partner	Integrative relationships support information-sharing and Computer-to-Computer transmission of fixed structure transactional information.	Collaborative planning relationships facilitate collaborative relationships, where many-to-many information is not just exchanged and transmitted, but is jointly developed by the buyer and seller.
• Most B2B transactions are taking place outside the marketplace (via email, fax and mail) • Supports synchronized, but independent planning and forecasting (one-to-many, many-to-many) • Minimum support of integrated execution – such eMarkets function as middleware and message brokers • Information sharing relationships differ from collaborative relationships primarily in that information is sent on an FYI basis	• Rich information exchange and event notification (one-to-many, many-to-many) • Most transactions between backend systems (ERP) are transmitted via the marketplace • No support of synchronized planning – planning is still completed within each partner • Supports synchronized execution of routine transactions (i.e. Order fulfillment, Replenishment) • These activities involve information notifying the buyer and seller that a purchase is taking place and that funds need to be exchanged	• All collaborative relationships involve some sort of joint planning and plan execution. • Rich information exchange and exceptions/alert notification • Most transactions between backend systems (ERP) are transmitted via the marketplace (one-to-many, many-to-many) • Supports joint synchronized planning and synchronized execution of routine transactions (i.e. Order fulfillment, Replenishment) • Most routing processes are driven by real time exception handling •

A trading partnership between a particular buyer and seller could be based on all three types of relationships described above. That is, some information may be exchanged on a transactional basis, some on an information-sharing basis, and some on a collaborative basis. Collaborative relationships require that the other two types have already been implemented. Thus, eMarkets based on information-sharing and integrative relationships simplify buyer/seller integration through a single communication and co-ordination venue. Nevertheless, both models require that most members still own and maintain elaborate internal APS systems. A third model is emerging that will probably in some industries overtake the other two. Some eMarket are currently developing collaborative capabilities, and will play the part of industry optimisers, by actively co-ordinating entire supply networks. These full-featured sites will monitor cross-enterprise demand and capacity to fulfil customers' needs with optimal supplier capacity. Participants may directly own them through Private, Public, or Consortium-oriented constellations. Customers and suppliers that connect into these hubs will pay for APS system and Event-/Exception Management System services through an ASP-like

model of subscription fees along with à la carte payments for additional services. That will make this model a favourite Private eMarket (eHub) configuration among large, dominating players that want to consolidate their relationship portfolio, but it will also be appropriate among fragmented industries, where many small partners will join forces to create Collaborative Communities.

These elaborate *Collaborative eMarkets* will aggregate demand and supply, match buyers and sellers, consolidate capacity, monitor multi-level performance and notify changes real-time based on internal exception management rule-engines. They will even be able to map multi-company MRP executions (via BOM explosions that produce time-specific dependent requirements). Supply network optimisation will take place via APS tools executing from within the eMarket, which will then transmit planning information and exceptions/alert notification to the relevant members. Most transactions between back end ERP systems will be transmitted via the eMarket in both one-to-many and many-to-many modes. Collaborative eMarkets support joint synchronised-planning and synchronised-execution of routine transactions, while more advanced versions will deliver a full range of transactional relationships, like collaborative production scheduling, and collaborative product development. To summarise, these eMarkets will deliver an extensive collaborative platform to jointly plan and execute a wide range of activities. Such collaboration will ensure:

- visibility by real-time communication in the supply network,
- performance transparency, and
- responsiveness, by reducing time taken to detect demand, commit, produce, and fulfil buyer demands.

It sounds like rocket science, but many applications are currently developing the necessary software to implement these types of collaborative eMarkets.

COLLABORATIVE PLANNING PROCESSES IN EMARKETS

In accordance with ECR and CPFR[3] pilot results, the major collaboration opportunity areas are in demand planning and inventory replenishment. Yet, this is only the beginning. Upcoming eMarkets, whether being information-sharing, integrative or even collaborative, will implement standardised data and process models that will support a range of processes. Multilateral relationships among trading partners within an eMarket often differ depending on the companies involved. In general, collaborative relationships dependent upon the specific buyer and seller involved. It is highly unlikely that all trading partners will have the same relationships with the buyer or seller. There will always be favoured suppliers and customers with different collaborating capabilities. Additionally, electronic collaboration will differ substantially by a trading partner's role within the supply network, depending on whether it is a manufacturer, distributor-wholesaler, retailer, or 3PL provider. The most important collaboration opportunity areas will vary along a supply network and are likely to result in three major, clusters of buyer-seller collaborative planning processes:

- Manufacturer with its suppliers including tier supplier with its suppliers
- Manufacturer with its customers, for example, wholesale distributors and retailers
- Companies with their 3PL providers

Manufacturer to Customer Collaborative Planning Processes

For finished-/brand goods manufacturers and their customers, such as wholesale-distributors and retailers, the major collaboration opportunities lie in demand planning and inventory replenishment. By collaborating and synchronising sales forecasts these supply networks attempt to jointly evaluate customer demand at the point of consumption (for example, retail store shelves). Once established, a replenishment plan that meets the anticipated demand will be mutually agreed. Co-ordinating both the demand and replenishment plans will help ensure that customer requirements are optimally met for service and cost. Such collaboration requires that the partners co-operate electronically to share and modify each other's demand plans and forecasts. Each trading partner will need to understand the other's promotional plans and the plan's impact on customer demand. Within this context, it will be important to electronically share promotional calendars that include anticipated marketing actions designed to stimulate customer demand, typically: a) Pricing actions, b) Customer promotions, c) Advertising plans, d) New product introductions, and e) Assortment plans. In addition to demand forecasts and replenishment plans, a manufacturer and retailer may collaboratively manage a

category of products, possibly at store level. This will require that they electronically collaborate on store layout and shelf space plans. In addition, POS (point-of-sales) data involving store-level demographic information must be shared, to jointly assess the assortment of products to be placed within each store. The 3 processes of demand, promotions and replenishment planning are briefly described below.

Collaborative Demand Forecasting and Planning
Collaborative Demand Forecasting co-ordinates demand and replenishment plans to ensure that consumer requirements are met in an optimised fashion, by jointly developing forecasts and promotional calendars. While traditional planning or APS, uses historical shipment data for statistical modeling, and incorporates market intelligence, collaborative forecasting uses POS data –(store level consumer demand) rather than DC replenishment, agreed consensus-based forecasts and joint promotional plans to reach an optimal forecast. Thus, relevant input from business partners can be taken into account to synchronise planning across the network, to generate optimised plans based on data from the eMarket. Collaborative forecasting may be supported or undertaken by an eMarket designed to:

- Enable the exchange of appropriate up-to-date planning information with partners
- Allow easy access using the internet to read and change data (via planning books)
- Restrict user access to authorised data and activities (via a Data Warehouse)
- Support consensus planning process (through shared planning books)
- Support exception-based management (through alert notification via email)
- Generate 'one number' for forecasts across the supply network.

Collaborative Demand Planning between manufacturers and their distributors/customers allows both partners to streamline their work processes and ultimately benefit from a more accurate forecast, better market transparency, greater stability, reduced inventory and better communication. Buyer and seller develop a single forecast and update it regularly based on information shared over the eMarket. It is a B2B workflow, with data exchanged dynamically, designed to increase in-stock customer stock while cutting inventory.

Collaborative Promotion Planning
Collaborative Promotion Planning between distributors and their customers allows these supply network partners to streamline their work processes and create a more accurate plan. For example the distributor's promotion planning data (created in Collaborative Forecasting) is accessible to external partners via the eMarket, who can then decide to participate in a planned promotion. In Promotion Planning via an eMarket, the external partner in the collaborative planning process accepts or rejects a promotion offered by the distributor or manufacturer. By accessing the shared planning books or data warehouse of the eMarket, the external partner can: display a list of promotions, display detailed information such as periods and quantities, accept or reject the offer, attach a note to a promotion plan. By combining promotions and demand forecasting plus information regarding new product introductions, partners are able to streamline the demand signal and achieve substantial benefits.

Collaborative Replenishment
Collaborative Replenishment takes over after completion of the previous processes - collaborative forecasting and collaborative promotion planning. Via eMarkets, partners have the opportunity of automating large parts of the replenishment transactions using internet-based Vendor Managed Inventory (iVMI). VMI is a service provided by a supplier for its customers, whereby the supplier takes on the task of requirement planning for its own products within the retail company. For VMI to work, the supplier must not only be able to track the amount of its products stocked at the customer site, but it must also take into account the customers sales forecasts. Making VMI possible via an eMarket provides small retailers with an economical alternative to participating in supply chain planning. It also allows the retailer to maintain control over the data it is sending to the supplier, and change it if necessary. To achieve their goals, participants will be able to access the network planning data through internet planning books residing in the eMarket.

Manufacturer-Supplier Collaborative Planning Processes

The major benefits that a manufacturer will get from collaborating with its suppliers include new product development and synchronised production scheduling. The latter can be segmented into collaborative supplier planning for strategic and tactical decisions, collaborative procurement for operational day-to-day requirements, and collaborative production execution primarily for outsourced production, or subcontracted production. Collaborative product development will yield benefits by helping the manufacturer to develop stronger products more efficiently. There are several major opportunity areas within collaborative product development:

- Design Collaboration - Product/packaging designs will need to be electronically shared and modified--possibly using CAD files.
- Product-Costing Information - Costing data will need to be shared and mutually established to help ensure that target product costs are achieved.
- Subcontracting Relationships - Contract terms and conditions will need to be jointly established and contracts electronically passed back and forth for modification and approval.

In a similar fashion, co-ordinating or synchronising all tier-supplier production schedules will help ensure that future material needs are satisfied, resulting in improved order fulfilment. This is often realised by electronically sharing schedules with suppliers, allowing them to provide feedback and make changes, based on whether or not material needs can be met. This type of collaboration includes visibility into the raw material, WIP, and FG inventories of suppliers to help ensure synchronised realistic production schedules.

Collaborative Supplier Planning

Collaborative Supplier Planning, gives suppliers access to production plans as well as dependent requirements, which enables them to use consumer demand and customer inventory levels to fine-tune replenishment. Materials requirements are shared at an early stage between manufacturers and suppliers so that all parties involved can adjust their supply and production plans; for example, if the delivery of the dependent requirements can't be made in time, an alternative date, source or routing can be suggested. The goal of this process is to generate optimised plans based on data from the supply network. Enterprises can now focus on enhancing customer value by enabling true business collaboration among business partners in their networks. Collaborative supplier planning may be conducted or executed by an eMarket designed to:

- Enable the exchange of appropriate and up-to-date planning information with business partners
- Restrict user access to authorised data and activities
- Support a consensus planning process and exception-based management
- Generate 'one number' for supply chain planning across networks

Within Collaborative Supply Planning the manufacturer and supplier exchange information on the material requirements of the manufacturer, and they collaborate on exceptions. This type of collaboration enables both the manufacturer and supplier to create more accurate supply network and production plans. The plans can be updated regularly based on information shared over the internet. This is a business-to-business workflow, with data exchanged dynamically, which is designed to decrease inventory.

Collaborative Production Execution

Collaborative Production Execution ensures that future material needs are satisfied, resulting in improved order fulfilment. Manufacturers get visibility into suppliers' material availability, schedule and constraints. By calculating dynamic material availability and lead-time (using constraints across the network), suppliers and subcontractors may optimise their own production schedules resulting in more timely deliveries and minimal delays.

Collaborative Engineering or Product Design

Collaborative Engineering or Product Design, improves the development cycle time for new products and helps develop better products more efficiently This is often a critical part of Manufacturer-Supplier collaboration and hence is intimately linked with the supply planning collaboration.

Manufacturer-3PL Collaborative Planning Processes

Collaboration among companies and their Third Party Logistics (3PL) providers will focus on joint logistics planning. 3PLs provide transportation shipper services in order to make better use of their transportation equipment and warehousing and distribution centre facilities. This might involve collaborative planning to help ensure vehicles are fully loaded by the following:

- Consolidating a shipper's inbound, inter-facility, and outbound shipments
- Combining the shipper's goods with those of another trading partner

These activities involve a shipper electronically sharing the shipment plan with a carrier and comparing it to the availability of equipment, labour, and other transportation resources. Trading partners can support this through joint electronic visibility of transportation resources.

Collaboration between a company and 3PLs providing distribution centre (DC) services will focus on the productive use of facilities, labour, and equipment. This might involve electronic sharing of DC inventory replenishment plans with analysis to ensure that planned receipts do not overload the receiving function. Plans may also need to be shared to ensure that each DC has enough space to store planned inventories. In addition, 3PL providers can provide insight into the potential for co-sharing of space among trading partners. For example, around the Christmas holidays some of the manufacturer's DCs may be overloaded, providing an opportunity to use a 3PL facility on a temporary basis to correct the problem. This type of collaboration would be further supported by electronic visibility into the availability of DC space and other resources.

Collaborative Transportation Planning
Collaborative Transportation Planning between manufacturers and their carriers allows both partners to streamline their work processes, and ultimately benefit from reduced handling costs, greater transparency and greater efficiency. Members of an eMarket may share DC inventory replenishment plans with logistics providers, and inform their carriers about their shipment plans, and the carriers can accept, reject or change shipment requests. Based on current developments within the APS systems sphere, eMarkets are enabling a fuller view of the opportunities for transportation by facilitating:

- Tendering for Bids: Planners can offer shipments to carriers through the eMarket. A planner can react to the offers made by the carrier and also supervise the status of the tenders.
- Advanced Shipping Notification: Vendors can use inbound-delivery processing through the internet to create, amend and process shipping notifications for the customer.

At the point of shipping notification entry, a list appears to the vendor that displays all purchase orders and scheduling agreements that are relevant to that vendor. After the delivery date and the unique identification number have been entered, an inbound delivery for the customer is generated. The customer and the vendor can also modify these deliveries at a later stage, and all parties can view any changes in real time. This process is an alternative to the previous order notification method through EDI and produces the same result.

With this process we finish the brief tour of some collaborative planning processes that may be executed between partners through an eMarket. In the next section, we will present the tangible benefits achieved by implementing collaborative planning.

BENEFITS OF COLLABORATIVE PLANNING

We are currently lacking empirical proof of the actual benefits of collaborative planning, with the major exception of downstream collaborative planning via CPFR, which is fast becoming the most explored model. In comparison with Vendor Managed Inventory or other initiatives that have gone before, pilot implementations of CPFR (in Wal-Mart, Kimberly Clarke, HP, P&G, Nabisco and others) have shown significant benefits, to both buyer (retailer, manufacturer etc.) and seller (manufacturer, supplier etc.) alike:

- Significant reduction in supplier and channel inventories, with decreased obsolescence rates and returned goods
- Significant reduction in excess material inventory on site, due to demand steering capability

- Improvement in quality of material positioning signals and visibility of supplier capabilities, leading to more optimum planning and demand management
- Increased DC labour productivity
- Significant reduction in material shortages, resulting in improved customer order fulfilment and service levels
- Improved forecast accuracy and timeliness
- Improved customer service levels as a service-based barrier to competition
- Competitive advantage over the supply base, by securing better commitment and terms than competitors
- More rapid new product introductions and faster time to market
- Better visibility into multiple tiers of the supply chain, increasing velocity of change
- Improved capacity management for contract manufacturer
- Overall improvement in order completion times
- Increased sales with faster order to cash cycles

Value Lever	Operational / Financial Impact	Benefit to Buyer	Benefit to Seller	Driver / Enabler
Collaborative Planning	Clearly defined performance metrics			Define roles & responsibilities for each partner
	Agreed joint category strategies			Develop joint business plans
Collaborative Forecasting	Improved Forecast Accuracy And Timeliness	Up to 20%		Increase forecast accuracy via shared downstream/ upstream information
	Improved Supply Visibility			Improve supply information
	Improved Demand Visibility			Improve demand information
	Improved Exception-Handling			Enhance Communication between trading partners
Collaborative Replenishment	Reduced Lead Times Through "Pull" Replenishment		50% reduction	Increase downstream demand visibility
	Higher In-Stock Availability	5-8%		Reduce order cycle times, Improve in-stock position
	Reduced Production Cycle Times		Up 67% reduction	Improve procurement co-ordination, Supply contracts for new products
	Reduced Transaction Costs	50-75%	50-75%	Flexible aggregate planning
	Reduced Inventory Costs		13%	Increase pipeline visibility to eliminate buffer inventory
	Lower Overall Inventory Levels	10-30% reduction	18-40% reduction	Improve match of supply w/ demand
	Increased Inventory Turns	10-30%	20-70%	Improve sell through and cycle times
	Reduction In Returns		5-20%	Improve downstream demand visibility
	Decreased Obsolescence Rates		5-10%	Improve downstream demand visibility
	Reduced Transportation Costs		2-10%	Improve fulfilment and procurement co-ordination
	Improved Replenishment Cycles			Improve manufacturing planning and efficiencies
	Improved Customer Service Levels	10-30%		Improve demand information
	Improved Reliability Of Supply			Improve procurement co-ordination
	Increased Sales	20-70%		Improve order fill rates via pipeline visibility & reduce lead times
	Reduced Lost Sales			Improve demand information
	Improved Order Fulfilment			Improve fulfilment co-ordination

A survey by Industry Directions (April 2000), found that over two-thirds of those surveyed (130 Fortune-500 corporations) are actively involved in CPFR activities or pilot research. About one-quarter of the respondents have a CPFR pilot underway or plan to start a pilot within the next 6 months. To date, these pilot projects have reported impressive results. Deployment of collaboration in an eMarkets environment offers tremendous benefits, as described above. At the same time, the increased level of aggregation that Collaborative eMarkets provide result in challenges for the traditional hub-and-spoke-based collaboration planning processes.

Some Implementation Considerations

The benefits of Collaborative Planning may be clear, but there are 3 key interdependent questions that need to be addressed:

1. Who should you collaborate with?
2. How should you go about collaboration?

3. What are the requirements for and the implications of collaboration?

Who should you collaborate with?

Collaboration requires significant investment in time and resource for both partners in order to achieve significant benefits, so the selection of partners should be carefully considered. New technology and the introduction of eMarkets and ASPs may have reduced some of the technical risk and cost, but for collaborative planning to be effective it needs the alignment of people, processes and resources between partners. As with any other critical business decision the cost and benefits should be carefully assessed, and in this case this is for at least 2 partners. The result is that collaboration should be targeted at your long term trading partners, for key products, where the product and service are primary buying factors.

How should you go about collaboration?

There are several possible strategies for collaboration. Historically implementation of CPFR can be seen as partnership, process or technology lead. Close trading partners have recognised the mutual benefits of collaborative planning, and have evolved the processes for this. This has had the benefit of building on the trust and working knowledge, which are key to success; however, the processes and any technical solutions may be inefficient and not easily transferable to other partners. Alternatively, companies have designed CPFR processes into their ways of working, and rolled these out to their key partners, for example, motor manufacturers and their suppliers. However, this may be dependent on a dominant player, and be less than fully collaborative. Latterly Advanced Planning Systems (APS), and the internet have provided the tools that have driven many CPFR implementations. The ideal strategy combines the right balance of partnership, appropriate process design and use of enabling technology.

One feature of many successful CPFR implementations, and inherent in a partnership lead approach, is the use of pilots. This allows the evolution of the right process, and the understanding of the changes needed to organisation, roles, and performance measures, as well as technology.

The advent of eMarkets offers another strategy for CPFR implementation. The eMarket can provide the technology needed for real-time communications, or act as an ASP for APS software that a company may not be able or willing to invest in alone. However, the lure of the new technology and the apparent low cost of entry should not distract from the need to choose the right partners and ensure that the people and process capabilities are in place.

What are the requirements for and implications of implementation?

Case companies that have already implemented the CPFR business model, have identified some critical cross-functional issues, that need to be understood and addressed by potential partners pursuing closer collaborative arrangements:

- Building trust and collaboration among trading partners
- Reducing channel conflict (by mapping and handling potential exceptions)
- Enhancing channel services
- Pricing based on market conditions and value, versus standard pricing
- Responding to customer needs and demands, versus the pushing of products from the supply chain to customers.
- Adopting standard business documents, terms, and processes.

EPILOGUE

As we enter the new millennium, we continue to see new exciting developments in supply chain management and business networks. eBusiness is changing the Industrial Age models of customer acquisition, procurement, pricing, and customer satisfaction as well as how we measure the performance of a corporation. Focus on the customer is all consuming; customers want to buy products anytime, anywhere, cheap and fast, and fulfilment processes must be structured to meet these demanding requirements. Companies are simply recognising that the old rules will not give them the continued success that they had enjoyed, but instead, new ways and protocols are emerging.

What we have presented so far is the substantial structural changes that are underway within the area of supply networks and subsequently eMarkets. The functionally driven silos present in many contemporary supply chains are being transformed, and replaced by more streamlined, electronically based processes. Internet and associated technologies such as XML have revolutionised inter-enterprise business processes by enabling seamless information exchange between business partners. High volumes of data can be transferred at low cost, and even minor business partners can exchange information in an economic manner. Interactive on-line access to each others' systems can be achieved easily via a conventional internet browser. Thus, propelled by the accelerating permeation of information and communication technologies into intra-organisational processes that also enables inter-organisational collaboration, companies are clustering into private and collaborative marketplaces to conduct their business. These Collaborative eMarkets are entering in between the buyer-seller relationship and are bound to change the rules of the competitive game. In short, we believe that the development, promotion, and adoption of these network and business models, will maximise the impact of eBusiness in most industries, and enable companies and customers to begin reaping the benefits of the new digital economy.

10 questions for the business manager

1. Is your supply chain built for responsiveness?
2. What are your competitors doing?
3. Do you have the right relationship - are you ready to 'commit' for the long term?
4. Are you ready to enter into collaboration with your suppliers as well as your customers?
5. Will you be able to meet the service and responsiveness needs of your customers without CPFR?
6. How ready and willing are you to open up and share both your company data and your processes with your customers/suppliers?
7. What are your business/ebusiness priorities in the next 2-5 years?
8. How much of the planning and replenishment process are you willing to hand over to your customer/supplier?
9. Can you meet the entry criteria: inventory accuracy, supply reliability and flexibility, transactional accuracy and efficiency and communication links?
10. Are there other key areas of collaboration with a partner to complement CPFR, for example, collaborative product development?

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[1] Instead of fewer intermediaries in contemporary supply networks, these last 2 years has shown a plethora of new intermediaries have entereding the buyer-seller relationship. It is evident that companies are able to connect with more partners in business communities, thus creating a multiplicity of network structures on top of each other. Complexity increases by aAdditional intermediaries increase complexity, whilste flow and ownership of product and information iscan be decoupled. Actually, cCollaborative planning will take place via a collection of eMarkets, and dedicated B2B links. Some of the new intermediaries entering this interdependent network are:

- Virtual Manufacturer: This type of organisation does not manufacture anything, nor does it have any plants, but rather, controls product development, marketing, and sales as well as co-ordinatinge customer service for its products. It hires contract manufacturers and 3PLs and fulfilment service providers to make, assemble, and ship final products to its customers.

- Virtual Distributor: This type of organisation does not distribute anything and does not have any warehouses. It markets products, takes orders for multiple suppliers, controls marketing and sales, and co-ordinates order fulfilment. However, it relies on its suppliers to make, assemble, and ship final products directly to its customers.
- Virtual Retailer: This type of organisation, better known as an internet retailer, does not own any brick-and-mortar stores. It does, however, merchandise products in virtual stores, namely hosted Websites. The virtual retailer controls order fulfilment and can rely on its own distribution capability or suppliers to ship products directly to customers.

[2] Electronic marketplaces enable companies to efficiently trade and collaborate with their trading partners, and can be described as centralized portals that have either a vertical or horizontal orientation. Vertical eMarkets, service a specific industry segment by de-livering one location to transact business. They are "vertical" in the sense that they are channeled to serve specific industries, such as computing, chemicals, steel, and agricul-ture. Another model is referred to as a horizontal portal where, for example, a given process such as procurement or transportation is transacted for several industry seg-ments that share common traits. Horizontal eMarkets are web-sites where buyers and sellers can come together to communicate, share ideas, advertise, bid in auctions, conduct transactions, and manage inventory and fulfillment. They are “horizontal” in the sense that they serve a wide range of diverse industries or address horizontal applica-tions across industries (examples: VerticalNet and TradeOut.com). Another horizontal variant connects customers to a set of suppliers that specialize in a functional supply chain area (e.g. logistics and transportation services). Based on current praxis and re-search undertaken, we can classify these developments into various types of eMarkets:

- The Public eMarket or Independent Trading Exchange (ITE), a many-to-many (m:n) business model, concentrates on the physical transaction – the buyer/seller process. This model pursues to maximize industry-specific or market-based effi-ciencies in order to achieve cost minimization and asset optimization. Each buyer and seller is but a click away and upon execution of the transaction, they can go their separate ways and may never meet again (i.e. no loyalty). This model is close to the neoclassic characterization of “perfect competition”, in that it sup-ports transparent exchange of information such as pricing and availability of all alternative products so that buyers will always be able to make rational decisions. ITEs are the natural extension of the Auction model in a B2B commodity world. Current cases focus on vertical industries – although a provider of the technology (the hosting service, for example) could offer many focused “hubs” each to a dif-ferent industry (examples: e-Chemicals, e-Steel, PlasticNet, etc.).
- Another variant of a Public eMarket is the Consortium Trading Exchange (CTE), which in many respects resembles an electronic version of an industry cartel. Various members of an industry provide the liquidity and momentum in order to achieve industry-specific efficiencies. CTEs concentrate on vertical sourcing and provide a framework for more intense intra-consortium coordination and co-operation (examples: HighTech.com, Covisint, GNX, Transora, etc).
- A Private eMarket or eHub, also called Private Trading Exchange (PTE), is a mar-ketplace instigated and owned by an entrepreneurial or influential member of a supply network – typically a brand or competence owner. Participation is ensured via cooperative coercion, a new, but very powerful phenomenon that attempts to achieve process and cost efficiencies for a certain subset or segments of an In-dustry – in some cases it enforces membership (like Daimler-Chrysler’s PTE re-quirements). In fact, cooperative coercion leads to a tightly-nit, contractual, long-term partnership that pursues collaboration between trading partners. So, PTEs are consolidating pre-established relationships between well known partners. PTEs are often structured as one-to-many hubs hosted by the supply network host. The initial motivation is procurement cost savings through collaboration, process control, dynamic pricing, plus cycle time and efficiency improvements.
- Finally, networks consisting of smaller companies can congregate into a Commu-nity Exchange or Supply Hub , a hybrid model that tries to marry the benefits of transaction cost reduction of the ITE model with the additional benefits of close collaboration between trading partners, who jointly invest in the CCE, share costs and profits in order to improve the performance of the supply network. Contrary to the Consortium Exchanges, which are predominantly populated by competi-tors, CCEs are more vertical in scope in that they may include partners from the whole value chain related to a product or services.

[3] CPFR is a business process model through which companies can optimise supply chain activities such as Vendor Managed Inventory (VMI) by leveraging the internet and EDI to radically reduce inventories and expenses while improving customer service. CPFR provides a set of guidelines on how companies can establish dense, collaborative partnerships within a supply network. From a business process standpoint, CPFR defines how retailers and suppliers can synchronise their different planning functions. Retailers are focused on predicting customer reaction to promotions, competitors, and product category changes, while suppliers usually concentrate on managing the level of inventory at distribution centres. While the retailer's objective is to keep products in stock in stores, the supplier's objective is to create the most efficient production and replenishment process possible. These differences are reflected in each party’s sales and order forecasting processes.