

# From Supply Chain to Collaborative Commerce Networks: The Next Step in Supply Chain Management

Traditional ERP systems improve efficiency within the four walls of an enterprise by integrating and streamlining internal processes. Companies have been able to reduce cost and increase customer service due to the integrated processes enabled by systems such as SAP R/3. But on its own, an enterprise generates only a portion of the value-add created in a supply chain. Hence, a paradigm shift is taking place as companies realize that the next great leap in Supply Chain Management depends on streamlining and collaborating on inter-enterprise business processes with partners.

There are many ways in which business partners can collaborate, and exchanging information to improve the planning process is nothing new. Normally, the exchange takes place by phone, fax, mail, or e-mail. However, the unstructured nature of the process limits the potential collaboration activities. In some cases, EDI is being used to transfer data, but the high cost and rigidity of EDI technologies limits both the number of partners one can deal with and the types of collaborative activities.

## Enter the Internet

Internet and associated technologies such as XML promise to revolutionize 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 economical manner. Interactive online access to each other's systems can be achieved easily via a conventional Internet browser.

Internet technologies enable enterprises to establish secure, scalable, and dynamic collaborative commerce networks with their business partners at a low cost. These networks allow enterprises to carry out collaborative activities ranging from product design to order execution with chosen partners.

As in any networking environment, the

network itself provides the means by which information moves from one place to another. As companies approach inter-enterprise planning and execution, they realize that it is not enough to have an infrastructure to move information around. For real collaborative commerce, a solid backbone of the right information is paramount for success.

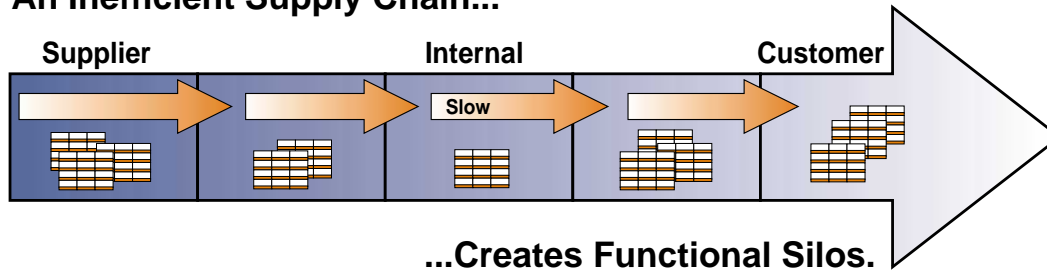
## Business Value

The goal of Supply Chain Management has always been to increase customer service and simultaneously reduce costs. Supply chain costs are driven by inventory along the chain (finished goods, work-in-process, etc.) and the capital investment required to meet expected demand. Factors like functional silos within companies and weak hand-off participation among supply chain partners have been the main reason for supply chain inefficiency. The task of reducing supply chain costs is expected to become even more difficult due to increasing mass customization of products, a rise in outsourcing, and the globalization of markets.

ERP systems such as SAP R/3 streamline internal processes so that companies can work with "one number" within the enterprise. Advanced Supply Chain Management solutions greatly improve internal planning processes. Internal collaboration, concurrent real-time planning, and optimization have resulted in

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## An Inefficient Supply Chain...



**Figure 1.0** An inefficient supply chain creates functional silos.

increased ROA, reduced inventory, and compression of cycle times.

Collaborative planning will now extend the boundaries of supply chain management to include all relevant business partners and enable collaborative business processes across the network. The distinct entities in the network such as suppliers, manufacturers, and retailers will be able to cooperate and act as a single entity focused on delivering enhanced customer value while reducing costs throughout the entire chain. The net result: “one number” across the supply networks.

The direct fiscal benefits include lower inventory levels, higher inventory returns, improved cash flow, and reduced capital investment. Enterprises can increase their profitability and their market share at the same time. The indirect benefits include

tighter relationships with customers leading to higher customer satisfaction. Leading-edge companies perceive collaborative abilities as a significant competitive advantage that will help them retain existing customers and acquire new ones.

Advanced supply chain management greatly improves the picture. Internal collaboration, concurrent, real-time planning, information sharing, and value-added service are all key factors in speeding up the process. The results include increased ROA, reduction of variability and inventory, and a considerable compression of cycle times.

Ultimate efficiency, however, is achieved through collaboration. Collaboration removes the divisive barriers that formerly separated the distinct links in the chain: procurement companies, production companies, and so on. Though the supply chain partners still consist of distinct entities, they cooperate at an unprecedented level because they realize the mutual benefits. The results of real-time collaboration and true partnership include low inventory levels, high inventory returns, an improved cash flow, and a drastic reduction of the dreaded bullwhip effect.

### Supply Chain Collaborative Planning Enables Dynamic Collaborative Networks

#### Best in class, collaborative planning

The goal of collaborative planning, as the name suggests, is to help enterprises carry

out collaborative supply chain planning activities with their business partners. Thus, relevant input from business partners can be taken into account to synchronize planning across the network and leverage advanced supply chain management systems to generate optimized plans based on data from the supply network. Enterprises can now focus on enhancing customer value by enabling true business collaboration across business partners in their networks.

Collaborative planning solutions should be designed to:

- Enable exchange of required planning information with business partners
- Allow the use of browser to read and change data
- Restrict user access to authorized data and activities
- Support consensus planning process
- Support exception-based management
- Generate “one number” for supply chain planning across networks
- Be used with an integrated enterprise solution or as a stand alone collaboration server

It is imperative that your advanced Supply Chain Management system leverage Internet technology to enable collaborative planning across business partner networks. The salient features include:

- Browse and update data via a browser
- Multiple partner access

W<sup>2</sup>

#### Weblink

For more on collaborative commerce:  
[evans.ASCET.com](http://evans.ASCET.com)

For more on inter-enterprise planning:  
[reiter.ASCET.com](http://reiter.ASCET.com)  
[culotta.ASCET.com](http://culotta.ASCET.com)

For more on functional silos, see:  
[fqinn.ASCET.com](http://fqinn.ASCET.com)

For more on forecasting, see:  
[lapide.ASCET.com](http://lapide.ASCET.com)  
[uchneat.ASCET.com](http://uchneat.ASCET.com)  
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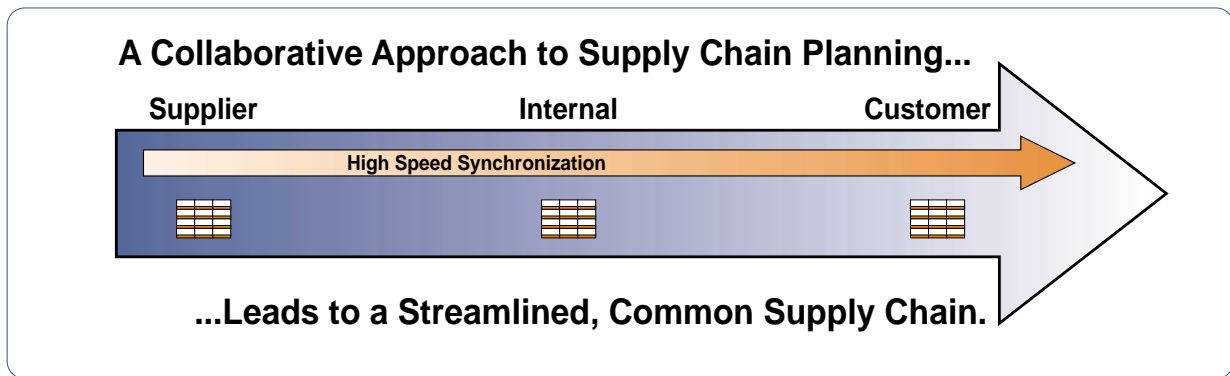


Figure 2.0

A collaborative approach to supply chain planning leads to a streamlined, common supply chain.

- User configuration of negotiation process as a series of activities
- User configurable screens and work-places
- Authorization to restrict partner/user access to selected data and activities
- Easy selection of products and data to be used for collaboration
- Alerts business partners to exceptions via Internet e-mail with relevant data
- Connect to multiple systems ( e.g., R/3 and non-R/3)
- Link to partner systems using XML technology over the Internet
- State-of-the-art Internet security technology

#### Visibility

Advanced supply chain management solutions must enable visibility across the collaborative networks by enabling planners to view logistics plans of their business partners. POS data, promotion data, inventory data, production plans, distribution plans, shipment plans, and more can be shared across the network.

#### Responsiveness

Advanced Supply Chain Management solutions must enable companies to plan collaboratively and reduce order cycles. Planners are alerted to exceptions in the network enabling them to react in real time.

Exception-based management allows planners to focus on critical activities without being deluged by data.

#### Synchronization

Advanced Supply Chain Management solutions must enable enterprises to plan concurrently across the commerce network. Procurement, production, and distribution can be planned by taking constraints such as capacities and materials across the entire supply network into account. This leads to tighter synchronization between business partners, enabling the network to act as a single company.

#### Collaborative Commerce

Advanced Supply Chain Management solutions must enable enterprises to form dynamic collaborative networks by using the Internet browser as the collaboration medium. Given the global ubiquity of the Internet, enterprises can form dynamic collaboration communities on the fly.

#### Internet technology to enable collaborative planning:

- Consensus-based forecasting
- CPFR compliant collaborative forecasting
- VMI
- Supplier collaboration

Each of these processes is described in more detail in the next segment of this white paper, but it is important to note that these are only examples that illustrate the variety of ways in which enterprises can collaborate with their partners.

#### Internet-Enabled Consensus-Based Forecasting

##### Collaboration is based on consensus

Consensus-based forecasting allows you to create plans for different business goals (strategic business plan, tactical sales plan, operational supply chain plan, etc.) and integrates them into one consensus plan that drives your business. In advanced Supply Chain Management solutions, you take this process a step further and create a joint business plan together with your supply chain partners that drives your business as well as theirs.

Several parties are usually involved in creating a consensus-based forecast, among them the central planning department that creates a consolidated forecast for all products, the key account manager who creates a forecast for a specific retailer or wholesaler, and the sales department, which forecasts its own demand. Each of these parties bases its forecast on specific information. The goal of consensus-based forecasting is to consolidate the various forecasts into a common time series to be used for further planning.

A typical consensus-based process, using forecast data from different sources, is described below:

1. Department-specific forecasts are made. Departments involved:

- Sales (created for a combination of product and customer, goals are tactical: maximize sales, focus on promotions, orders, POS data, competitive info, customer information)
  - Logistics ( created for combination of product/item and location, goals are operational: minimize costs, fulfill orders, focus on shipments, material and capacity constraints)
  - Marketing (combination of product family/market zone, focus on promotions and events, causal relationships, and syndicated POS data, goals are strategic: increase demand, reduce stock)
2. Team meeting is held to reach consensus. A special planning book is used for this purpose. Time specifications include a planning horizon (short to medium term), buckets in days, and a specified frequency (once weekly)
  3. Manual adjustments can be made
  4. Accuracy of forecast is checked against actual sales data

### What is CPFR?

Collaborative Planning, Forecasting and Replenishment (CPFR) is one of the fastest growing technologies for both retail and consumer goods firms; it is hailed as the next great advance in inventory and customer relationships. CPFR is a cross between continuous replenishment programs (CRP) and vendor-managed inventory (VMI). Analysts agree that VMI has been successful in many cases, but inaccurate forecasts and undependable shipments have been major obstacles to higher performance.

Collaboration requires redefinition of a company's goals and direction. It requires trust between partners. For it to succeed, partners must be willing to share their promotion schedules, POS data, and inventory data. While redefining a company's direction is no easy task, the benefits can be great for those companies that do manage the leap across traditional barriers. Consumer goods companies can expect major sales gains and a reduction in inventory, while retailers can count on increased in-stock customer service leading to higher sales and optimized promotional costs.

### THE PROCESS OF CPFR: COLLABORATIVE PLANNING FORECASTING AND REPLENISHMENT

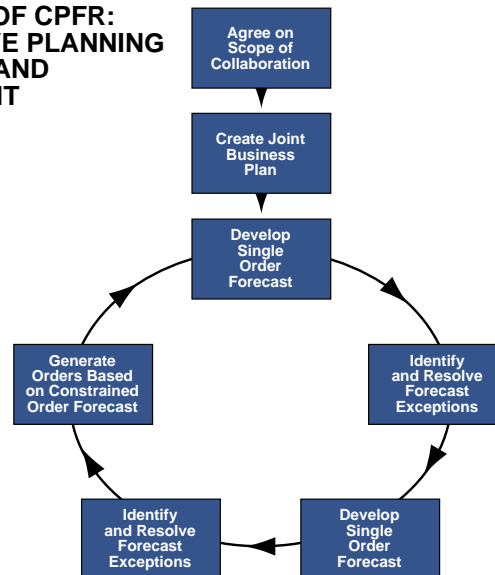


Figure 3 .0 The process of CPFR

### The Collaborative Planning FR Process

Buyer and seller develop a single forecast and update it regularly based on information shared over the Internet. It is a business-to-business workflow, with data exchanged dynamically, designed to increase in-stock customer stock while cutting inventory. The basic process consists of seven steps:

- Agree on the process: define role of each partner, establish confidentiality of shared information, commit resources, agree on exception handling and performance measurement.
- Create a joint business plan and establish products to be jointly managed including category role, strategy, and tactics.
- Develop a single forecast of consumer demand based on combined promotion calendars and analysis of POS data and causal data.
- Identify and resolve forecast exceptions. This is achieved by comparing current measured values such as stock levels in each store adjusted for changes such as

promotions against the agreed-upon exception criteria (in-stock level, forecast accuracy targets).

- Develop a single order forecast that time-phases the sales forecast while meeting the business plan's inventory and service objectives, and accommodating capacity constraints for manufacturing, shipping, and more.
- Identify and resolve exceptions to the forecast, particularly those involving the manufacturer's constraints in delivering specified volumes, creating an interactive loop for revising orders.
- Generate orders based on the constrained order forecast. The near-term orders are fixed while the long-term ones are used for planning.

### How to Make It Work

Mutual trust and open communication are key to CPFR success. Ingrained fears and the tendency to maintain secrecy and promote aggressive competition must be overcome. Many companies are loath to share planning data for fear that competitors will somehow gain access to confi-

<b>Step 1</b>	Each partner can make only one proposal for the consensual time series. All the propositions for a consensual time series are used as the basis for negotiations. At the end of this process (step 4) a single consensual time series will have been agreed upon. The proposed time series are generated either in SAP APO, for example in Demand Planning, or are transferred into SAP APO from outside via an interface. The data transfer could occur automatically through a standard interface or manually via an Internet browser.
<b>Step 2</b>	Once all partners have proposed a time series, the first consensual time series proposal is calculated. The rules for generating the time series are implemented as a macro in a planning book.
<b>Step 3</b>	Analogous to step 2, the macros for alert generation are started. Alerts refer to individual planning folders.
<b>Step 4</b>	Branching into a planning book is possible from the Alert Monitor. All relevant data (planning folder, aggregation level) is stored in the alert. Partners can suggest alternative solutions in the planning book. When the planning book is saved, new alerts are generated through macros. The end of this step occurs either when the dominant partner declares it to be over or when all partners have reached an agreement.

Figure 3 .0 The process of CPFR

dential information. In fact, security is a major concern.

Questions like “who gets what portion of the generated savings” must be answered before the collaborative process begins. An understanding of each other’s data, tribal knowledge, and performance measurement is needed. Management must take the lead in creating working alliances and combating adversarial relationships. New systems and methods must be learned, and last but not least, one trading partner alone will not bring in big benefits. The key is to involve large numbers of partners.

#### Internet Enabled VMI

Vendor Managed Inventory (VMI) is a service provided by a supplier for its customers whereby the supplier takes on the task of requirements planning for its own products within the retail company. For VMI to work, the supplier not only must be able to track

the amount of its products stocked at the customer site, it must also take into account the customer’s sales forecasts.

Making VMI possible via Internet 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 Supply Network Planning data through Internet planning books.

#### Supplier Collaboration

Just as the exchange of forecast and sales data between retailers has mutual benefits, the planning process can be improved even more if suppliers and customers engage in an early exchange of planned dependent requirements and production quantities. In the automotive industry, strong integration between sup-

plier and customer is already widely accepted. Suppliers are connected to their customers, in this case, auto manufacturers, by EDI. That solution, however, requires large investments on the side of the supplier. The World Wide Web offers an economical alternative to traditional EDI, making it an especially interesting option for smaller companies that deal with more limited amounts of data.

A supply planner can have access to those aspects of the planning situation that affect him. Users can have access to production plans as well as dependent requirements. Internet-enabled planning books allow users to have an interactive role; for example, if the delivery of the dependent requirements can’t be made in time, an alternative date can be suggested.

#### Process flow and status management

Both process flow definition and status management support the consensus reaching process. The following process is a typical example:

1. Create a variety of time series per partner
2. Create a proposal for a consensual time series
3. Generate alerts
4. Agree upon consensual time series

Depending on the scenario, the consensus-reaching process is repeated several times. For example, according to the Collaborative Planning standards, a consensus should first be reached on the sales forecast and then on the production order forecast.

#### Conclusion

Advanced Supply Chain Management solutions must enable the creation of dynamic collaborative networks. Enterprises can implement a streamlined supply network resulting in better customer service and lower supply chain costs. In essence, CPFR ushers in the brave new world of collaborative commerce networks.