



A White Paper



**CPFR — COLLABORATIVE PLANNING, FORECASTING,
AND REPLENISHMENT**

Delivering Results for Manufacturers

Serving the Retail Sector

February 2003

Executive Summary: Achieving Results with CPFR

Collaborative Planning, Forecasting, and Replenishment (CPFR[®]) is a business model that takes a holistic approach to supply chain management and information exchange among trading partners. It uses common metrics, standard language, and firm agreements to improve supply chain efficiencies for all participants.

The driving premise of CPFR is that all supply chain participants develop a synchronized forecast. Every participant in a CPFR process — supplier, manufacturer, distributor, retailer — can view and amend forecast data to optimize the process from end to end. Essentially, CPFR puts an end to guesswork in forecasting. It means that manufacturers and retailers share their plans, with detailed knowledge of each others' assumptions and constraints.

The CPFR initiative is driven by a committee of the Voluntary Interindustry Commerce Standards (VICS) Association comprising leading retailers, manufacturers, and solution providers. The committee's stated mission, declared on the CPFR.org Web site, is: "to create collaborative relationships between buyers and sellers through co-managed processes and shared information. By integrating demand and supply side processes, CPFR will improve efficiencies, increase sales, reduce fixed assets and working capital, and reduce inventory for the entire supply chain while satisfying consumer needs."

From a manufacturer's perspective, adoption of a CPFR model may represent a dramatic and disconcerting shift away from well-established business practices for working with customers in retail sectors. However, migration towards collaboration offers the potential for huge profitability improvements. Additionally, since the world's leading retailers are well represented on the CPFR committee, manufacturers may find their top customers requiring more collaborative business practices.

This white paper describes how to tackle all the planning, forecasting, replenishment, and execution phases of the CPFR model. It also explains how J.D. Edwards Supply Chain Management software and interoperability tools can help achieve the target objectives set by the CPFR committee. One key output of the committee has been the CPFR Business Model road map (see Figure 1). The map outlines the three phases — planning, forecasting, and replenishment — and the nine steps associated with the CPFR journey. In addition, a critical tenth step — delivery execution — is identified. It is during this step that the strength of a tightly integrated back-office system comes into play. Planning loses its meaning if the production, quality, financial, and order management aspects of the transaction are not executed correctly, and if critical information needed by trading partners is not readily available when needed.

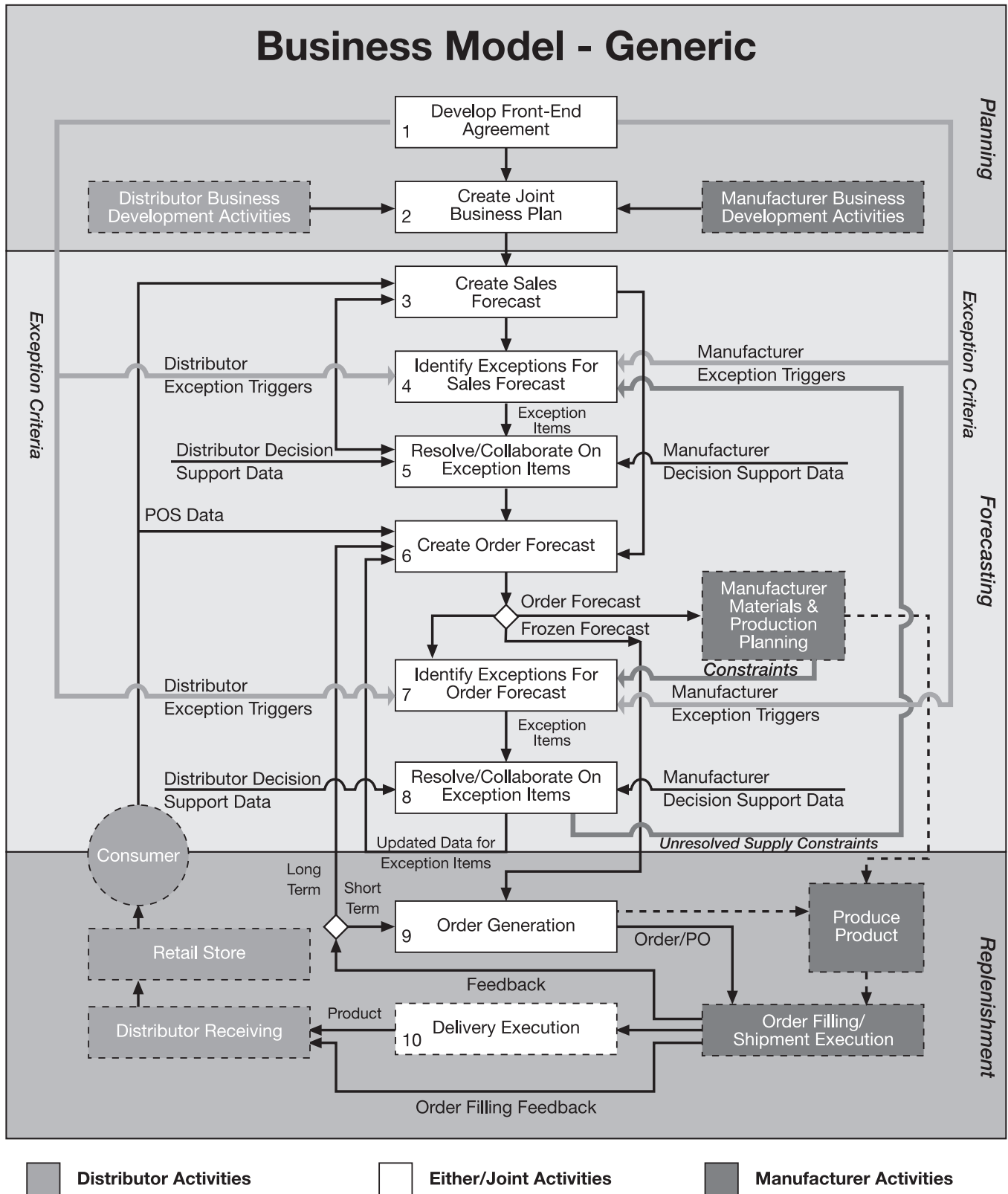


Figure 1: CPFR Business Process Scenario Workbook
 (Source: CPFR.org Web site, CPFR ©1998,VICS).

What is CPFR?

Collaborative Planning, Forecasting, and Replenishment is a nine-step approach to improving supply chain management, and ties demand planning and supply planning into one process. For any change in the demand cycle — whether a truck breaks down or a seasonal holiday commences — inventory is redistributed and adjusted throughout the entire supply network. Participants can continuously verify the accuracy of each others' demand forecasts and handle exceptions in real time using the same data sets. CPFR also uses performance feedback loops, such as “how did I do on my forecasts?,” to continually improve the system's efficiency.

The CPFR holistic approach to improving collaboration is the next natural step in the battle to cut non-value-adding costs in the supply chain. Excess supply chain inventory is an expense that is paid for (directly or indirectly) by manufacturers and retailers. Lost sales because of “stock-outs” or the wrong stock on hand is revenue lost by both sides. The costs of antiquated manual processes, custom integrations of different partner IT systems, and searching for information in multiple sources add up to overhead that cuts into the profit margins of manufacturers and retailers alike.

Earlier efforts to improve forecasting accuracy — manufacturing resource planning, electronic data interchange, and others — could not easily scale up so that volatile data could be shared by a critical mass of supply chain partners; too often, they relied on proprietary information in favored relationships. Also, many involved point solutions rather than integrated approaches to problem-solving. Additionally, few forecasting and planning tools have built-in capabilities to account for the cultural barriers — organizational “silos” and lack of trust — that so often stand in the way.

Although the CPFR concept may seem simple, turning it into practice is no easy task. CPFR presents cultural challenges within an organization and among trading partners. At the very least, it requires a change in business processes, and a change from an inward focus to a broad multi-enterprise view. The beauty of CPFR is that it acknowledges and works to overcome real-world barriers to data-sharing.

The key to CPFR is exception-based communication — an automated system in which the usual exceptions such as order cancellations or last-minute changes to delivery destination are handled smoothly by the CPFR system's information technology platforms. J.D. Edwards offers unique functionality through its Supply Chain Management solutions to meet, enhance, and exceed capabilities outlined in the CPFR business model.

The Benefits, Value, and Purpose of CPFR

The CPFR committee has developed target objectives for business benefits, which include the following:

- Increased in-stock at shelf 5-8%
- Reduced average network inventory 10%
- Increased sales 8-10%
- Reduced operating expense 1-2%
- Reduced cost of goods 3-4%
- Reduced lead time/cycle time 25-30%
- Decreased account receivables 8-10%
- Reduced forecast error +/- 20% (six weeks out) and +/- 30% (twelve weeks out)

(Source: University of Denver Supply Chain Roundtable: "CPFR Overview." Value Chain Collaboration Associates, Inc., May 17, 2002.)

Pilot CPFR projects to date have yielded inventory reductions of at least 10%.¹ Specific initiatives have been impressive: one leading retailer and its baked-goods supplier reported a 14% reduction in store-level inventory with a 32% increase in sales. Another top retailer and its cereals supplier observed more than a 50% increase in category sales.² The key benefits fall into three areas:

Lower Inventories for Higher Profits

By formulating more accurate predictions of demand, safety stock can be reduced and materials can be more effectively managed throughout the supply chain. The resulting decrease in inventory levels, along with improved material flow, releases working capital for use elsewhere in the company.

Improved Customer Service through Better Forecasting

More reliable forecasts allow more effective ways of anticipating demand across the entire supply chain. Stock-outs or wrong stock on hand can be avoided, thereby increasing sales and improving delivery performance.

Improved Return on Technology Investment

With effective CPFR technology solutions, both manufacturers and retailers benefit from reduced overhead costs because several inefficiencies are eliminated: antiquated manual processes; custom integrations of different partner IT systems (or standards); and searching for information in multiple sources/systems. Simplified integration toolsets and enterprise portal implementation yield some of the most cost-effective ways for a network of trading partners to connect and collaborate.

¹ "The Next Wave of Supply Chain Advantage: Collaborative Planning, Forecasting and Replenishment," an April 2000 study by Industry Directions sponsored by Syncra Systems, Inc.

² "Introduction to Collaborative Planning, Forecasting and Replenishment," 2001, Syncra Systems, Inc.

CPFR in Action

A successful CPFR solution begins with mutual commitment and good planning. The integrated approach facilitated by J.D. Edwards CPFR technology enables retailers, manufacturers, and partners to unite in a formal agreement to share information critical to supply chain performance and to establish a joint business plan. J.D. Edwards CPFR incorporates Advanced Planning and Supply Chain Execution software to allow all partners to access the same information. Those features permit manufacturers, distributors, and retailers to make the right decisions about inventory, materials, and resources even before orders are placed. The strength of J.D. Edwards CPFR is that it supports the nine steps defined by CPFR as well as manages the manufacturing, distribution, and order tracking steps in the replenishment cycle — steps that other software vendors often have to outsource or develop partnerships to manage.

Phase I — Planning

This phase relates to people, processes, and developing of trust. Partners must break down cultural barriers and company-centric perceptions so they can view the bigger picture. J.D. Edwards' top-tier technology can empower a successful CPFR process, but partners must share a unified vision to make the process work. First, partners must define their relationships and identify what processes need to be changed to allow stronger collaboration. Next, "trigger" points for alerts must be identified and assignment charts developed that designate who responds to the alerts and in what time frame. Overall, suppliers may have to change compensation plans and move away from "push" plans, so that shared forecasts can "pull" information through the processes. Specific benchmarks and key performance indicators (KPIs) must then be established to determine the efficacy of the shared plan. The two major steps in this plan are developing a front-end agreement and creating a joint business plan.

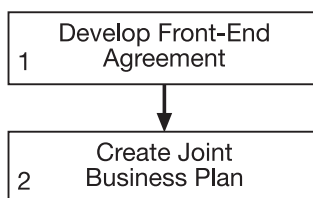


Figure 2: CPFR Business Process Scenario Workbook — Phase I, Planning (Source: CPFR.org Web site, CPFR ©1998,VICS).

Step 1: Developing a Front-end Agreement

How can J.D. Edwards help develop front-end agreements? Its Content Builder helps organizations create and maintain unstructured documents that define the agreement. The Business Intelligence modules allow partners to define and measure specific KPIs. Web Planning ensures that all partners have access to the information simultaneously, while the Portal makes all the data and information visible across the supply chain. The Portal makes it easy for partners to do the right thing by displaying the KPIs, maintaining the agreement, and generally unifying all the documents, messages, and plans into one easy-to-find and easy-to-use location. Establishing the agreement can take an hour, a day, a week, or more. Once pivotal specs are agreed upon, J.D. Edwards' software is ready to put the plan into action.

Step 2: Crafting a Joint Business Plan

The front-end agreement should produce a long-term pact spanning the life of the business. Obviously, an enormous amount of information will flow between partners. Who should get what? When? Where? How much should they get? J.D. Edwards Advanced Planning software provides a simple, flexible mechanism for sharing information, with the level of sharing dependent on the level of trust and experience between partners. The J.D. Edwards Production and Distribution Planning application allows creation of profiles that enable real-time alerts to flow among partners. Workgroups and roles are defined by those who will use the system. Information can be selected from approximately 90 different data views and close to 50 different types of alerts. Workgroups and roles can be associated with data views and alerts. Responses to forecast changes can be manual or automated, based on the alert tolerances agreed to by the partners. All members of a workgroup will receive certain data views and alerts; more specialized roles within a workgroup can access more specialized information. As partnerships develop and levels of trust grow, information "taps" can be opened in defined, measurable, and traceable ways. J.D. Edwards' software empowers collaborative partnerships with flexible tools designed to meet the standards defined by CPFR.

Phase II — Forecasting

The J.D. Edwards CPFR solution begins with a collaborative forecast of end-user demand and continues through all aspects of supply chain planning, providing support for both long-term and day-to-day decisions. Using the software's multiple "what-if" capabilities, planners can quickly and easily determine the financial and operational effects of any action throughout the supply chain. In Phase II, an organization creates the sales forecast, which then feeds into the order forecast. A large quantity of information rapidly permeates the entire process. A single, collaborative forecast is created with dynamic capability to address the complexities in the business environment.

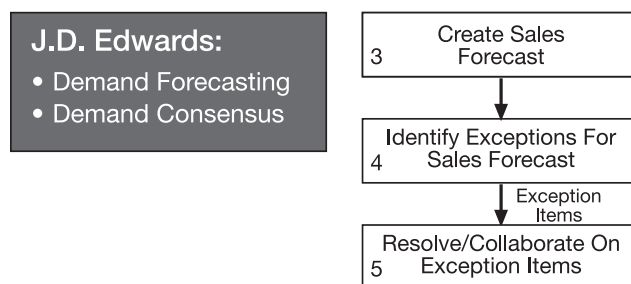


Figure 3: CPFR Business Process Scenario Workbook — Demand Forecasting (Source: CPFR.org Web site, CPFR ©1998, VICS).

Step 3: Forecasting Sales

Collaborative forecasting is the “engine” that drives successful CPFR functionality. J.D. Edwards generates innovative forecasting steps through its Demand Forecasting, Demand Consensus, and Production and Distribution Planning software. Using the Demand Forecasting application, organizations can build multi-dimensional models, which may include product hierarchies, geographies, channels, and specific customers. Causal variables such as pricing, promotions, and new store openings can also be completely integrated. In addition, historical data can be combined with near real-time variations in the channel to get the most accurate forecast.

Steps 4 and 5: Collaborating to Develop a Shared Forecast

Demand Consensus, an Internet-based solution, provides the power to widely and effectively deploy forecast collaboration. Partners, customers, and internal users can use the Internet to view their secured portion of a shared forecast. Beginning with Demand Forecasting’s statistical forecast, users can make changes to an existing forecast or import their own forecast based on the most up-to-date information. Multiple forecasts can be reconciled using a powerful algorithm that takes into account the historical accuracy of different forecast contributors. Exceptions are easily identified and messages are sent to reconcile unusual items. Each contributor (partner, supplier, and customer) becomes an integral part of the real-time collaborative process. The final enterprise forecast is the combination of the most accurate and timely information available.

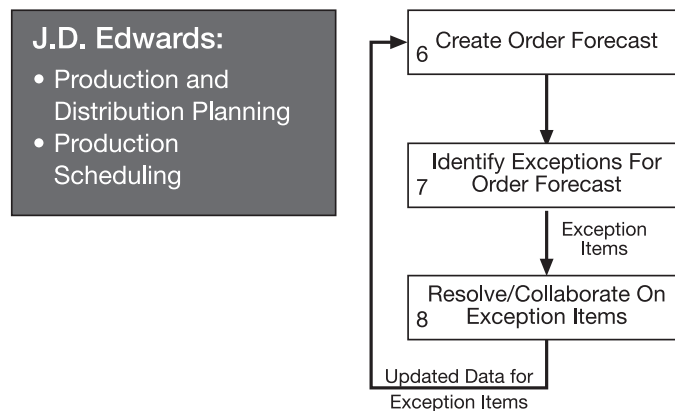


Figure 4: CPFR Business Process Scenario Workbook — Order Forecasting (Source: CPFR.org Web site, CPFR ©1998, VICS).

Step 6: Forecasting Orders

The order forecast relies on point-of-sale (POS) data, causal information, and inventory strategies to generate a specific forecast that supports the shared sales forecast. Actual volume numbers are time-phased and reflect inventory objectives sorted by product and receiving location. The order forecast allows the manufacturer to allocate production capacity against demand while minimizing safety stock.

J.D. Edwards supports this process by systematically aligning production capacity and scheduling items to give retailers increased confidence that orders will be delivered. With Production and Distribution Planning, it is possible to break down the sales forecast by sales period, sales region, and to more specific levels, such as individual stores. The order forecast integrates the sales forecast with order requirements to develop specific demand at retail level. Production and Distribution Planning ensures that the right product is built and delivered to the right aisle of the right store at the right time.

In turn, Production and Distribution Planning works with Production Scheduling, breaking down production requirements on a daily or even hourly basis to ensure that the correct capacity and throughput are optimized to fill the necessary order. Operating through real-time collaboration reduces the uncertainty between trading partners and leads to consolidated supply chain inventories. Inventory levels are decreased, customer responsiveness is increased, and a platform for continual improvement among trading partners is established.

Steps 7 and 8: Identifying and Resolving Exceptions

Step seven, identifying exceptions, determines what items fall outside the order forecast constraints established by the partners. The result is a list of exception items that are identified using the criteria established in the front-end agreement. Step eight, resolving exceptions, involves the process of investigating order forecast exceptions by querying shared data and submitting results to changes in the order forecast. Once again, the guidelines set down in the front-end agreement (or negotiations among partners) determine how those exceptions are resolved. J.D. Edwards' applications continue to support the process by automatically pinpointing identified exceptions and relaying updates to partners, identifying possible resolutions to exceptions.

J.D. Edwards' software has the right functionality to optimize the collaborative forecasting process and the right capability to manage the intricate exchange of information among participating partners. As exceptions develop, the Demand Consensus module manages the sales forecasting resolution process.

Phase III — Executing

During the final CPFR phase, front-end planning and forecasting come together with supply chain execution. Through J.D. Edwards' collaborative CPFR solution, the order is generated and committed to delivery, enabling successful order delivery execution.

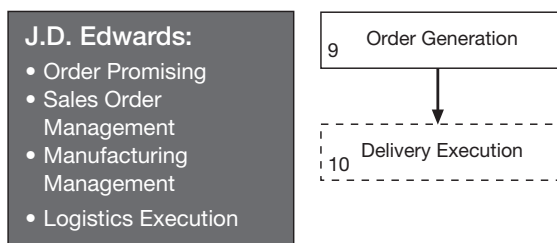


Figure 5: CPFR Business Process Scenario Workbook — Phase III, Executing (Source: CPFR.org Web site, CPFR ©1998,VICS).

Step 9: Generating Orders

The final step in the CPFR process is generating the order and promising the delivery. The essence of maintaining positive relationships with partners and customers is to deliver on promises. J.D. Edwards Order Promising software, together with Production and Distribution Planning, handles this critical step. Order Promising “tags” inventory (or raw materials) and addresses production schedules and transportation constraints to ensure that the product is ready when needed. Using Order Promising, companies can instantly determine where orders can best be satisfied — from inventory at any location, planned production orders, or purchase receipts. When there is a promotion (such as a new store opening or product launch), Order Promising allows companies to quote future delivery dates or other key information related to the event. Order Promising provides the real-time information essential to good customer service.

Step 10: Executing to the CPFR Plan

Although order generation is the ninth and final step of the formal CPFR model, the process doesn't end there. In effect, there is a tenth step involving execution of the order. This is where J.D. Edwards distinguishes itself. Once CPFR planning is complete, the model can feed data directly into J.D. Edwards Supply Chain Execution applications. Manufacturing, warehousing, order fulfillment, and transportation plans are completely synchronized into an integrated package to monitor and ensure on-time execution of the order delivery process.

Implementing CPFR with J.D. Edwards

A CPFR solution cannot be prone to failure — neither failure of the software nor of the communications infrastructure. It must be easy for all participants to maintain. Sensitive information should be accessible only to those with permission to view it. Gradually, as greater value is realized, partners will collaborate more to gain even greater supply chain visibility and efficiency.

J.D. Edwards' technology provides the flexibility, adaptability, and functionality to completely implement a successful CPFR solution. J.D. Edwards is fully compliant with CPFR data format standards, transport/network protocol guidelines, security considerations, and the prerequisites for scalability.

The breadth and depth of functionality inherent in J.D. Edwards' technology is what differentiates its CPFR solution. For instance, Web-enabled joint business planning allows partners to easily share and access secure information that is essential in developing a joint business plan. Demand Consensus and Demand Planning capabilities enable a concise and accurate forecast that surpasses the functionality of competitive products. J.D. Edwards also offers tools that permit rule-based comparison and exception-based execution to smooth unexpected oscillations in demand. Lastly, J.D. Edwards easily ties its CPFR planning technology to its Supply Chain Execution software, so that organizations can deliver what they promise. Partnering with J.D. Edwards to devise a CPFR model helps organizations develop a solution from the initial planning phases all the way through to delivery execution in an efficient, integrated way.

Connectivity is a Key Requirement

Application integration and connectivity are key elements of any CPFR solution. Most companies recognize that application integration across an enterprise is far from easy. When it is extended to external partners, it becomes a monumental undertaking. J.D. Edwards helps companies move to an integrated end-to-end solution without the significant drains on cost and time that businesses typically experience. J.D. Edwards provides toolsets that manage internal and external connectivity.

Internal Integration — J.D. Edwards Enterprise XPI™ provides the integration backbone within the enterprise, linking applications to each other. It is often referred to as middleware or EAI (Enterprise Application Integration). Compared to traditional point-to-point integration, Enterprise XPI provides a more scalable, stable, high-performance infrastructure to build upon. Enterprise XPI is a powerful tool when complex integration is required and when real-time transaction flow is a must.

External Integration — J.D. Edwards Inter-Enterprise XPI provides the inter-company integration backbone. Companies can communicate, transact business, and share business processes with their partners using a wide variety of different standards — EDI, XML (such as RosettaNet®, UCCNet, and CIDX) Flatfile, or e-mail. Inter-Enterprise XPI connects directly to the Enterprise XPI infrastructure so that sharing business processes internally and externally is seamless.

Connectivity with Trading Partners — Companies are turning to portal solutions to consolidate and manage information both within and outside the enterprise. The J.D. Edwards Portal is a secure, flexible gateway to the extended enterprise. The Portal aggregates applications, data, services, and content from internal and external sources. It provides employees, customers, and suppliers alike with a single Web interface from which to access relevant, up-to-date information. The J.D. Edwards Portal offers cost-effective collaboration with trading partners and the additional benefits of:

- Pre-integration to J.D. Edwards solutions including Enterprise Resource Planning, Customer Relationship Management, Business Intelligence, Workforce Management, and third-party applications
- Increased employee productivity because data is centralized
- Rapid deployment and integration of new applications
- Improved customer service and reduced call volume
- Accessibility via Web browser, desktop, laptop, or through a variety of handheld devices

Conclusion

Several years ago, CPFR concepts evolved to address critical business inefficiencies and deficiencies between manufacturers and retailers. CPFR has progressed to becoming an accepted solution for enhancing the relationships and operations among these trading partners. The fundamental objective of CPFR is to shift corporate focus from an inward focus to a multi-enterprise view of sharing knowledge and information. The benefits experienced by those adopting the CPFR model show the value of a collaborative planning model.

For most companies, a major challenge to implementing CPFR is making the transition to a collaborative culture built on trust. The companies that can vault the “four walls” that sustain isolated practices, and enter truly collaborative operating arrangements with key trading partners, soon find that trust builds quickly.

The guiding principles behind CPFR are building a trading partner network and developing a single shared forecast of consumer demand. Success for manufacturers will be determined by:

- The commitment within the organization to make the transition to collaboration
- Implementation of a flexible, robust technology solution that can deliver rapid results at every step of the CPFR journey, and within the enterprise as well

J.D. Edwards is the solution partner of choice for many manufacturers and distributors. The unique functionality of its Supply Chain Management products meets, enhances, and exceeds the requirements outlined in the CPFR model. Additionally, integration and connectivity with trading partners are enabled using J.D. Edwards Inter-Enterprise XPI and J.D. Edwards Portal.

Collaboration is about building solid relationships, cutting non-value-adding costs from the supply chain, and creating a secure, reliable exchange of information among trading partners. The major decision for manufacturers and distributors is not whether to implement CPFR, but when and how. Building a relationship with J.D. Edwards can make this decision a win/win opportunity for all partners involved.



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