eHubs: The New Web-Enabled Technology Driving True Supply Chain Collaboration

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The eHub sets a new standard for information management systems, best practices, and trading partners in the supply chain, establishing one platform from which all players can manage, monitor, and execute all supply chain activities.

Classic Problems

Every company that sells through retailers or commercial wholesalers, or both, is struggling with the same supply chain issues.

Consider the manufacturer of consumer and business electronics selling through a variety of retailers. These retailers have distribution centers (DCs) nationwide to support their network of stores. The supplier also has a DC for its online store, as well as for its retailers' DCs. Each of these distribution channels requires special handling. Each customer, even each product the customer orders, may have different product, shipping, and value-added service requirements.

The challenge facing the supplier is in knowing what the retailers are selling, what they're forecasting to sell, and what inventory is in their DCs and stores to meet that demand. Assuming the retailers actually know what's in their stores, this information is often available well after the customer sale to be useful. So the supplier holds excess stock in its DCs to support the variances in demand from the retailers. The retailers hold stock in their DCs and their stores to support the variances in demand from their customers. Plus there's in-transit inventory to consider.

How can the supplier access information in real-time about forecasted demand, actual consumption, and current inventory levels? How can the supplier adequately respond to the fulfillment requirements of its various customers? How can the retailer know about future product availability? Because retail store point-of-sale (POS) data is one measure of consumer demand, wouldn't these data help lead to better decisions about inventory levels throughout the supply chain, especially at the store level, where space and cash flow are at a premium? Couldn't POS data automatically trigger inventory replenishment?

Now consider the heavy machinery manufacturer looking upstream to its material and component suppliers. How can the manufacturer ensure that its suppliers are informed about the manufacturer's current and future inventory needs? How can the manufacturer ensure that these suppliers have the right quantities to support the manufacturer's production? Conversely, how can the suppliers see how changes in the manufacturer's production schedules might affect them?

These are all classic problems that still exist in the supply chains between manufacturers, suppliers, retailers, and customers. Potential solutions have been around for years (such as collaborative planning, forecasting, and replenishment), but most have been difficult to implement. New supply chain architectures and new planning processes, to name two, have been stymied by constraints in technology, including disparate legacy systems, multiple standards, strains on computer horsepower, lack of an accessible communications pipeline (today's Internet), and expense.

Now business-to-business (B2B) e-commerce, e-marketplaces, trading exchanges – there are several names for essentially the same set of e-commerce capabilities – are addressing these same supply chain issues. Nonetheless, it's become painfully obvious that the promise of B2B e-commerce has yet to be realized. One reason for this is because the focus of e-marketplaces has been on only a small part of the supply chain, typically e-catalogs, e-procurement, and buyer/seller matchmaking for indirect materials. Another reason is because many e-marketplaces have had difficulty gaining traction among the potential members and suppliers these e-marketplaces wish to sign up for participation.

It's time for B2B e-commerce to focus on the broader set of activities in supply chain management. It's time to move away from simple auction and e-procurement capabilities for indirect materials and toward collaborative supply chain planning and execution automation for indirect and direct materials.

The eHub Concept

To realize the real value of B2B e-commerce, many enterprises will need to think about their supply chains as eHubs. Essentially, an eHub acts as a control center for the extended supply chain. It is a set of technologies that provides end-to-end supply chain integration and collaboration, information sharing, and visibility into the broad range of activities associated with demand planning, direct procurement, and order execution. In so doing, the eHub optimizes the supply chain itself and all its participants.

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What does end-to-end mean in this case? It means visibility into all stages of a customer transaction. It means optimized inventories across the supply chain. It means automating the execution of incoming customer transactions from far up your channel pipeline and all the way down to your contract manufacturers, and everybody in between. It means creating one dynamic version of the truth about supply and demand for all your trading partners for supply-chain coordination and collaboration. It is the center point for everything about supply and demand to pass through. Conceptually, this means extending buyer/seller matching and inter-enterprise integration well into the complex supply chain.

To make this happen, the eHub must be accessible by several different parties, all of whom would be contributing their independent pieces of information to the *systems, such as Enterprise Resource Planning (ERP) and supply chain planning systems, which are very much separate and typically don't talk to each other as much as they need to. An eHub has the translation capabilities to make it universally accessible by all those systems and, conversely, for those systems to provide the appropriate information to streamline business processes.*

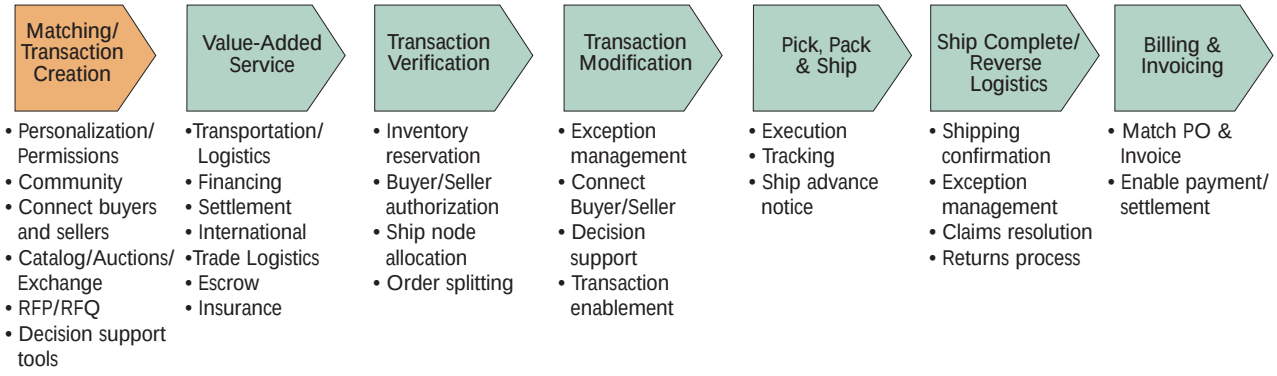

Figure 1 – The Transaction Lifecycle in the Supply Chain

to act effectively and efficiently. Ultimately, it's all about taking the most efficient action upon a customer commitment – the customer order.

Conceptually, an eHub is a Web-enabled platform for multiple trading parties to find, exchange, and prioritize information related buying and selling. Also, it automates all the different transactions that need to occur in customer fulfillment, both inbound and outbound.

There's a nuance here worth mentioning. The eHub is more than a static central repository for storing supply chain data. It is a dynamic environment that identifies and prioritizes the actions that need to occur in the supply chain at any given time. It then pushes relevant information to the appropriate trading partners so they can react to it and make the best decision possible. It does this according to configurable workflows that automate some of the more-manual decision making that occurs in any well-defined business process.

We're not just talking about buying and selling product. An eHub is more suited "mission control" center in the eHub. Here, all supply chain transactions are managed, monitored, and executed in real time by all trading partners. This is critical because fulfilling a customer order typically involves several parties, as well as parceling out parts of that order to various independent enterprises and service providers across the extended supply chain. The eHub, as the "system of record," services the multiple functions of providing a current view of the order as well as providing visibility into other aspects of fulfilling that order, such as production capacity, inventory availability, and logistics and fulfillment status.

At the very least, an eHub provides the following capabilities:

- ***Information sharing*** *to provide higher visibility into the supply chain for all participants, ensuring that the right product is in the right place at the right time. Better visibility leads to lower handling and processing costs. An eHub sits on top of and helps integrate conventional business, manufacturing, and distribution management*
- ***Automated execution*** *of previously manual supply chain transactions, thereby reducing transaction costs for both OEMs and channel partners. This becomes especially true if the automation is standardized across several partners. Such automation goes beyond conventional command and control of business transactions; it includes intelligence to manage those transactions and to recognize how they should progress. (For example, the system will need to act upon shortages and overages.) Plus, as orders are received, the system must execute those customer transactions with the nimbleness they need to be properly fulfilled, as well as understand exceptions and automate the appropriate course of action.*
- ***Value-added e-services*** *to allow dynamic matching of requests for quotation and pricing; auctions; collaborative planning, forecasting, and replenishment; optimization, and third-party content and services, such as financial settlement, tax management, data*

mining, Customer Relationship Management, and capacity management. Content offerings can create a consolidation point for channel-partner relationships. Such services would be optional, to be implemented after the basic eHub infrastructure is operational.

For this base functionality, eHubs are based on the following principles:

- ***Buyer-seller neutrality.*** *eHub participation would be voluntary; the incentives would be to eliminate supply chain inefficiencies and to extend revenue opportunities for all trading partners.*
- ***Standards-based.*** *The eHub would use standards developed by inter-industry bodies including RosettaNet, VICS, and GCI.*
- ***Security.*** *Security and confidentiality of sensitive data and proprietary information is critical to the success of the eHub.*
- ***Deep functionality.*** *eHub development is solely to support participants' information requirements and to add value to participants' planning and execution.*

This "deep functionality" includes order management, dynamic sourcing, inventory management, exception management, transaction verification and modification, claims resolution, reporting and analysis, reverse logistics, of course billing and invoicing, and much much more – all according to the workflows, business rules, and customer preferences related to a customer transaction.

In terms of technology, the eHub would of course be portable and scalable. It would be extensible in the sense that transaction workflows could be tailored at the granular level, even by customer and customer order, while incorporating the unique business logic of individual trading participants. And it would be interoperable with ERP and legacy systems.

more on the web

Read more about the management of information and data at the following link at the ASCET Project website: http://dupregauntt.ascet.com

The eHub in Operation

Implementing an eHub should not be another ERP "big-bang" implementation, even though it affects all functional areas of an enterprise and the trading partners in the extended enterprise. Instead, the implementation plan should consist of several "releases" of functionality. A good start is at the order/transaction/fulfillment execution level – the area with the most impact on customer satisfaction, the most visible success, and the biggest bang-for-your-buck. The goals starting at this level are two-fold. First, get an immediate win executing some of your business transactions. Second, get all the players on the same Web-based backbone platform so they can collaborate and execute supply chain activity.

Each customer transaction would be managed as a distinct entity, and that management would persist from beginning to end. This management includes all the decisions for fulfilling that order properly, such as special customer-specific handling requirements, different order statuses, the related workflows that emanate from the different order fulfillment transactions, and the inevitable changes made to orders. (Here's an interesting statistic: The requirements in over 80% of the incoming B2B orders are changed more than once before the order is actually shipped.)

Start small; capture order-related information from your immediate customers, suppliers, and trading partners. Then begin executing those orders based on the collected information. Next, automate those transactions. Last, add some optimization tools or other added-value services, those more sophisticated, but optional, pieces of the eHub. Realize that this last step goes beyond the collaboration created by information sharing and supply-chain transaction automation.

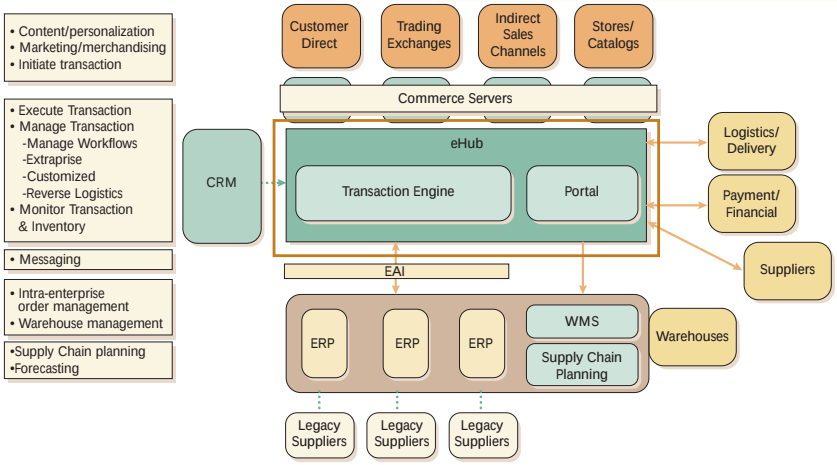

Figure 2 – eHub: The Transaction Backbone for the Supply Chain (Source: Yantra)

The Benefits of an eHub

Even before the eHub is fully implemented, it can deliver benefits to all partners in the supply chain, such as:

- ***Contract manufacturers****: Improved customer satisfaction, enhanced performance measurement/management, better asset utilization, streamlined inventory and operational expenses, and improved collaboration and management.*
- ***Manufacturers****: Faster time to market, reduced disruptions, continuous improvement, better decision-making (such as in planning and forecasting), and improved supply availability.*
- ***Suppliers and distributors****: Minimal distortion or latency in aggregate demand, more visibility across a longer planning horizon, improved material allocation, improved customer satisfaction and higher switching costs, and enhanced capacity planning.*
- ***Retailers****: Improved fill rates, better customer service, and reduced inventories at the store and distribution center level.*

All together, the eHub sets a new standard for information management systems, best practices, and trading partners in the supply chain. It establishes one platform from which all players can manage, monitor, and execute all supply chain activities. In doing so, it simplifies today's increasingly complex supply chains. This will help generate the efficiencies of the well-known Dell Computer direct-exchange model, while retaining the advantages that trading partners get from indirect supply chain channels.

In essence, the eHub provides the "dial tone" for supply chain interaction. When a disconnect is heard, it automatically initiates actions to meet customer expectations, addressing many issues before they become problematical. And this applies to both intra- and intercompany operations. For those companies in acquisition mode, the eHub also provides the neutral platform where all the acquired companies can be linked.

Bottom line: An eHub is all about capturing, displaying, and acting on all the necessary information to get the right product to the customer faster, and for all trading partners to do so more efficiently. Currently, the eHub is not quite yet a suite of products to buy as it is a concept to move toward – a vision of how companies should think about their supply chains and how e-commerce plays in their business strategies.

An eHub at Work

One company already realizing the value of an eHub is SciQuest.com (Raleigh, NC), an Internet-based B2B marketplace for scientific products used by pharmaceutical, clinical, biotechnology, chemical, and other organizations. Essentially, SciQuest acts as an eHub for three customer markets – scientists, purchasing professionals, and suppliers – automating thousands of complex buy and sell transactions every day.

To satisfy the diverse needs of its 700 suppliers, their 1.2 million products, and 5,000 customers, SciQuest needed a transaction management system with equally diverse capabilities. First, it had to flawlessly execute transactions throughout their lifecycles. It had to support thousands of transactions per day. Last, the system had to be both flexible and extensible to follow unique business rules for different products. (Keep in mind that the information in a typical customer order often passes through two to 15 different suppliers before it goes to the shipper of the customer's choice, such as FedEx and UPS.) And yet, SciQuest must recognize those orders with chemical combinations that may create controlled substances or explosives – and then generate an appropriate response. It also needs to bypass such monitoring for pre-approved buyers.

To meet these needs, SciQuest turned to PureE-commerce from Yantra Corp. (Acton, MA). PureE-commerce is an eHub that manages, monitors, and executes complex buy and sell transactions across the entire supply chain. It extends and integrates to the back-office systems of all supply chain participants, even those with limited technology infrastructures, while responding to and initiating events from third-party applications.

As the eHub, PureE-commerce acts as the "mission control" center for coordinating and executing all the diverse supply chain interactions between multiple trading partners in SciQuest's many-to-many supply chain. It also provides a platform to some pretty sophisticated e-commerce capabilities for SciQuest, such as order and inventory management, dynamic sourcing, exception management, transaction verification and modification, claims resolution, and reverse logistics. Last, the system integrates with SciQuest's internal systems, such as Customer Relationship Management, financial systems, and SciQuest's Web catalog.

In operation, SciQuest does more than just match buyers and suppliers. It manages buy and sell transactions across the SciQuest extraprise that consists of sellers, drop-shippers, logistics providers, shipping companies, and buyers. Orders are managed at the line-item level so they can be split to multiple consignees and particular distribution centers can be selected based on business rules, such as geography or vendor preferences. Transactions can be paid online because payment processing providers are integrated with SciQuest's invoicing capability.

The result: SciQuest streamlines its very complex supply chain while at the same time provides its suppliers and customers with 24x7x365 assurance that the right product will get to the right buyers at the right time. ■