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Solutions for the Enterprise

WHITE PAPER

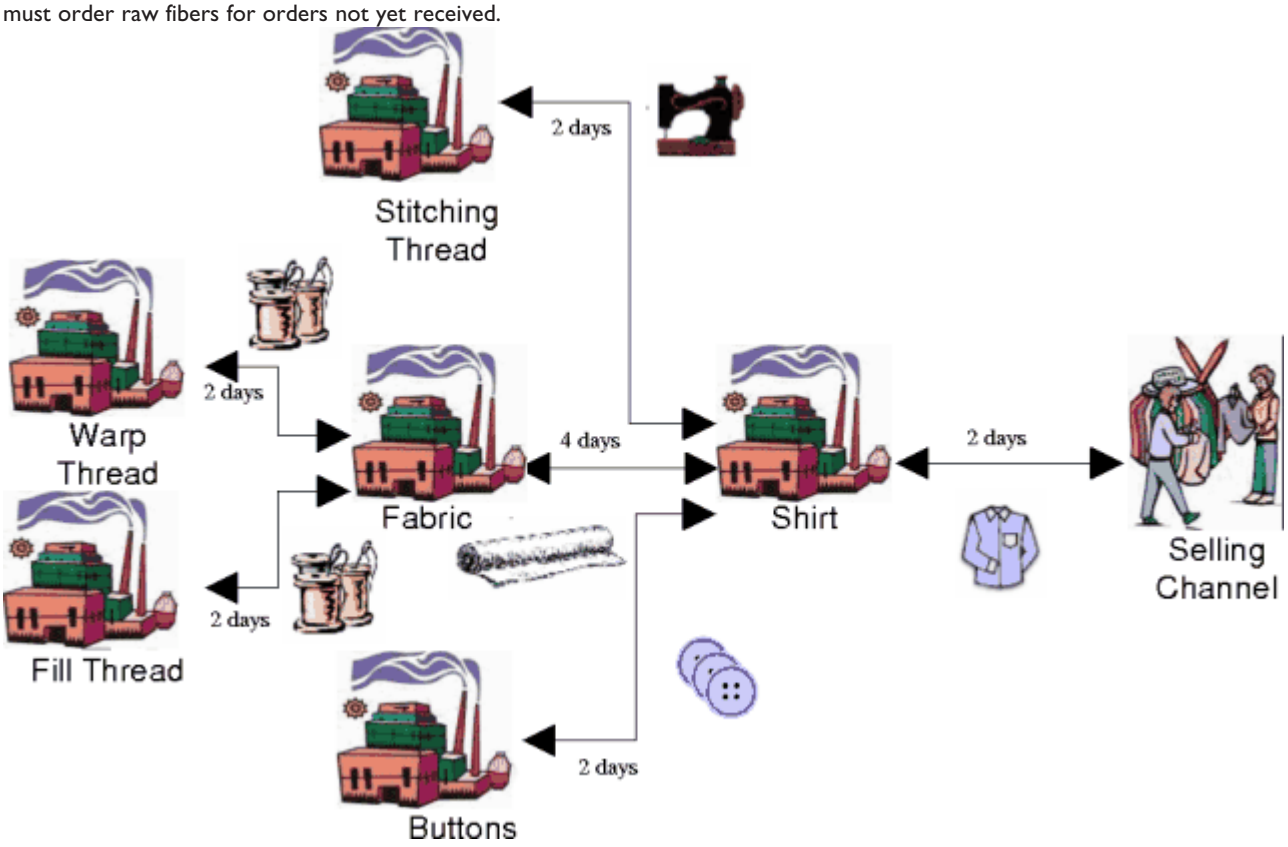
Coordinating Supply Chain Demand

Every communication technology appears to increase conversation between customers and suppliers in apparel chains. Phone calls. Faxes. Emails. EDI messages. XML messages. There is no lack of communication. But what is really desired is coordination. The difference is to communicate the right information at the right time.

With perfect coordination there would be greater efficiency in apparel chains. Inventories would be large enough to meet fluctuations in orders and sales, but small enough to not tie up capital in inventory, or to risk getting caught with unsold and unsellable (at a profit) stock. Today the technology and infrastructure exists to provide dynamic, cost-effective coordination in apparel chains. We follow an example to illustrate.

What Will My Customer Want?

Our example is forecasting demand. The production time from one end of a chain to another is often measured in weeks: to create threads and yarns from raw materials, fabrics from those threads and yarns, and then finished and ready to sell apparel from those fabrics. If a company makes 1000 types of threads, how much of each type should that company make of each type? The answer this week is probably simple – fill the orders. But the company must initiate making thread for orders next week, and must order raw fibers for orders not yet received.



Deciding how much incoming material to order often depends upon a forecast. The thread company forecasts its demand based on what? What each of its customers bought in recent months? The annual cycle? Our resident expert's best guess? There are

many techniques in practice.

The ultimate demand for the entire apparel chain is the forecast of sales of shirts, slacks, dresses, and shoes to consumers. The best estimates of demand are at the retail and wholesale end – the people nearest the customers and market. What do they think will be selling in coming months?

With sales forecasts one can - in theory - calculate the amount of material and all other demand through the apparel chain. If denim shirts are going to sell this fall then the fabric makers should forecast a lot of denim cloth and the thread makers should forecast a lot of cotton thread. The shirt maker forecasts 510,000 denim shirts. They calculate the range and distribution of sizes, and from there compute the total yards of fabric. This computed demand can be passed from the shirt maker to the cloth makers. A cloth maker gets the demand forecasts from all of their customers, and can then estimate the total cloth needed. From the cloth estimates the cloth maker can then forecast the amount of threads needed, and pass these forecasts to thread suppliers.

Is this derived forecast for thread more accurate than the thread company's in-house estimate? Over time, day by day, yes. Because it is derived from the best information available. And when the market and consumer demand fluctuate that fluctuation is coordinated. The shirt maker's forecast is coordinated with the fabric maker's forecast, and those are coordinated with the thread maker's forecast. They are reading from the same page.

Coordination is a Separate Application

One reason why good coordination is rare today is each company uses systems and techniques that first satisfy their internal needs. These applications are often designed to compete with one another – not to work together. And they are designed to take in data, compute, and present results for humans.

Coordination through a chain is an application that has not been created. Supply chain management applications can model whole chains in a single sophisticated database, and execute detailed algorithms to optimize the whole chain. But optimal for who? Often the owner of the SCM application has a definition of risk, inventory management, and how best to operate the whole chain. The owner is usually the company that makes the end products. But what of suppliers who have their own local dynamics, customers other than the first SCM application owner, and their own planning application?

So we distinguish coordination from management. Every company in the chain can decide how to compute their forecast based on the best forecasts available from customers, and their own local situation. The only new application needed is one that coordinates. The application needs to know who the customers and suppliers are, what is sold to customers and bought from suppliers, how the incoming products relate to the outgoing products, how to send and receive demand forecasts, and how to interact locally with people and applications.

The coordination should be reliable. If a coordinating partner is not available to accept a message, store it and wait for when the partner is available. And once sent and accepted, the message should not be sent again unless requested.

The coordination should be secure. The right suppliers get the right forecasts so uninvolved suppliers do not know what we do not want to tell them. And we make sure the messages are not hacked or falsified.

The coordination should be fast. EDI often suffers from a 24 hour turnaround. But we can download a much larger video clip across the Internet in seconds. Messaging between partners should be fast – the demand through a chain could theoretically propagate in less than 30 seconds to all members of the chain.

The coordination should be easy to install and use. Most business application installations involve large projects that take substantial time, money, and attention. Coordination can be simple since the hard parts – the local applications and Internet – are already in place.

The coordination should be flexible. If a shirt maker switches suppliers for a particular fabric that switch should be made as fast as the decision is made. As chains move closer to made-to-order the speed and flexibility of coordination is paramount.

An Approach

The Internet to date has enabled the World Wide Web. Through browsers and mail tools people around the world can communicate to other people and to servers (aka, web sites) in different companies. The technical basis is very sound. But the

ways companies interact remain very human-to-human and human-to-server. For coordination we want server-to-server, with humans local to servers.

Frankly this type of interaction has been rare, and the first attempts have been mixed. There are format standards for messages, such as extensible Markup Language (XML). These are good. But the ways the messages are exchanged are point to point through large software applications. In some cases these large server applications work well. But they do not distribute well to smaller suppliers, they require significant overhead to rearrange communication patterns, and they do a lot more than our coordination requires.

A new type of communication software is emerging, called peer-to-peer messaging. For local area networking within companies the concept is not new. The category of software called middleware supports peer-to-peer messaging on an Ethernet. But the equivalent has not existed for the Internet until very recently. For en example, see www.knownow.com.

Using this software a few simple components are needed for coordination. In our example a demand propagator is needed. For a company the propagator knows the customers and suppliers, their Internet addresses, the products coming in and out for each, how the products relate, where to send (locally) forecasts received, and where to send forecasts made. Some computations of dependant forecast (a forecast for a supplier computed solely from received forecasts) can be defined to be made automatically. In these cases the forecasts propagate in machine cycles without human intervention.

However this is not the general case. The propagator is a coordination application, reliant on peer-to-peer messaging to communicate with other propagators. The general case exchanges demand data with local applications, from Microsoft Excel to SAP and i2. A second case is direct communication with local planners.

To prove the premise Alodar Systems has created a prototype of the components and coordination application using Internet middleware. The prototype works.

Extending

Demand propagation can extend to passing sales data through the apparel chain. As soon as a sale is recorded at point of sale it can be passed through the chain. This real-time recording of actual (vs. forecasted) demand provided a sounder database for estimation algorithms, and for comparing forecasts with actuals.

Components for order coordination, capacity coordination, product list coordination, and price coordination can follow this model. In each case the coordination is separated from the local core applications. The financial systems, the planning systems, and even the designs are handled by applications designed specifically for these purposes. Meanwhile the coordination of the data with customers and suppliers is done through coordination applications designed specifically for this purpose.

Just Do It

Supply chain management has been offered as the cure for difficulties in supply chains, from apparel to automobiles. And within an enterprise SCM tools and techniques often work well. But supply chains are often distributed across many enterprises, each one operating independently to its own advantage, its own profit and growth. To increase efficiency, which leads to better cash flow, lower inventory-related risk, and faster chain responsiveness to market changes, the chain needs to coordinate. One enterprises SCM system with a suppliers ERP system, and another suppliers spreadsheet. These individual systems are not designed to coordinate across the Internet. But the properly designed coordination application is.

Other dimensions of SCM have limited improvements in coordination. SCM systems often are complex, capable of many functions, are expensive, and take a lot of time and resources to implement and sustain. This impression has frankly scared enterprise managers from implementing supply chain solutions.

Supply chain coordination is far different. They are relatively simple, they often naturally fit what already occurs, they are optimized specifically for coordination, are far less expensive, and relatively easy to implement and sustain. In other words, coordination is possible now. Contact us to find out how to proceed.