# Extending Your Enterprise Software Investments in Wholesale Distribution

**Sterling Commerce**
*An IBM Company*

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## Executive Overview

The adoption of Enterprise Resource Planning (ERP) systems over the past two decades has led to landmark increases in business productivity. Now, however, many wholesale distributors find themselves held back by these same systems. The problem is two-fold. First, while enterprise systems are very good at streamlining internal business operations, they are poorly suited for managing external processes with customers and suppliers beyond the four walls of the enterprise. Yet many distributor strategies such as postponement, outsourced logistics, cross-channel selling, and mergers and acquisitions demand this extended coordination.

The second problem is that ERP systems lack the flexibility to support highly customized, or frequently changing, operations. Yet in the current customer-driven economy, flexible business processes are imperative to support product configuration, value-added services, and rapid shifts in demand.

The way around both of these challenges is to extend structured ERP systems with flexible service-oriented architecture (SOA) based systems designed to support those external-facing business operations. While much has been written about the concept of SOA, this paper focuses on five best practices in the order-to-cash lifecycle that Sterling Commerce supports. It looks at the risks of an inflexible IT environment, and shows how SOA can present you with advantages in five areas: multi-channel selling, distributed order management, distributed warehouse management, global transportation management, and supply chain visibility.

## Why architecture matters

The ability of a business application to adapt to changing business requirements comes from its programming architecture. Most ERP systems are based on thirty year old technology and are comprised of millions of sequential commands compiled to replicate business processes. This architecture is fine if nothing changes in your business, but if something does, it's a problem. A single change can take months or years to reprogram because of the impact it can have on shared code lines, workflows with other programs, and database structures. The impact? Companies come up with manual workarounds or simply resist making changes to their business. So rather than an environment that inspires innovation through process improvement, ERP often creates an environment where change is difficult and costly.

## Support for new or changing workflows

By contrast, SOA utilizes a library of tasks, or services, strung together in unlimited ways to create individualized business processes. Commands can be easily assembled and reassembled to support new or changing workflows with graphical business process modelers. Instead of programmers scoping, rewriting code and debugging, super-users now drag and drop icons that represent process steps.

## Key problem areas

The way to achieve an IT environment that serves your customer-facing strategies (instead of the other way around) is to extend your control-driven, internally-focused

ERP systems with a flexible, externally-facing architecture that supports more agile operations. To illustrate, let's look at the five processes that cause the most trouble for most companies.

- Selling complex orders across divisional boundaries
- Orchestrating the fulfillment of complex orders
- Fulfilling across a network of options
- Taming distributed transportation requirements
- Gaining visibility to your inbound supply

## Selling Complex Orders Across Divisional Boundaries

### Fragmentation is frustrating

Many wholesale distributors are divided across organizational boundaries made up of separate product categories, acquired companies and customer channels. Disparate internal systems enforce those barriers between divisions to support separate accounting and measuring purposes. From a customer point of view, this fragmentation forces distributors to present multiple faces to their customers, forcing them to place orders across multiple Web sites, call centers and EDI hubs. This fragmented, and many times frustrating buying experience, no longer has to be the case.

### Organize your product offering by customer or channel

Back end systems are hard to eliminate and in many cases you do not want to eliminate them. The challenge is how to keep them running while improving your customer's experience, and drive down the cost of selling. Modern SOA-based systems provide the answer. The basis for a flexible system is to centralize product information. Disparate product catalogs in legacy systems are put into one master product catalog giving distributors the ability to combine any product offering for any customer channel. With modern pricing engines any items or bundled items can be priced to any customer segment in any combination of pricing rules. This gives distributors the ability to sell from their entire portfolio leveraging any, or multiple, pricing models to any segment in their customer base. This flexibility also provides distributors with the agility to change product combinations or pricing models as market requirements change. The concepts of product entitlements and multi-tenancy allow distributors to deliver the content, products and promotions to provide a customer specific purchasing experience whether it is through the Web, a sales person's field device or system to system.

### Give your suppliers access to update their latest selling information

According to AMR Research, 75% of manufactured goods are sold through wholesale distributors.[1] In other words, distributor's fortunes are based on your selling systems having complete and accurate knowledge of their supplier's products. In an ERP world, product catalogs are intended to be static, supporting cost accounting. In a customer facing world, distributors need to keep evolving product information current with latest enhancements, specifications and market messaging. To support the changing world

*"ERP vendors: Anyone pour concrete lately? It is easy to mush around business processes while it is still wet. When the concrete hardens you have to take a jack hammer to change your business processes."*

Beth Enslow, *Aberdeen Supply Chain Trends*, August 21, 2006

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1. Chris Newton, *Managing Order Fulfillment Across the Supply Chain*, October 1, 2001.

of wholesale distribution product portfolios, suppliers today need access to managing their own product content to keep it current and informative.

### Orchestrating complex order fulfillment

Now that you have provided your customers with a single face to all of your company's available products, bundles and solutions, how are you going to profitably fill those complex orders? Today, companies are moving toward order orchestration, or distributed order management (DOM) systems to manage complex and distributed fulfillment. DOM systems look across internal and external sources of supply including manufacturers, distributors and third-party logistics suppliers (3PLs) to determine the optimal locations from which to fill customer orders. DOM systems remove the constraints of fulfilling orders from designated locations and open up new strategies of fulfillment across the supply network. With added visibility across your extended supply chain you avoid lost sales from stock-outs, reduce inventory obsolescence, and lower fulfillment costs.

### Where ERP systems fall short

Cross-channel selling is here to stay. But ERP systems were not designed to fulfill orders across systems. Cross-system orders are typically handled by teams of costly specialists who process them offline, and then reconcile invoicing afterward across divisions. The outcome is these offerings are limited, which limits competitiveness. Another option is developing manual workarounds which entail increasing your staff. This also increases your order fulfillment costs and order-to-cash cycle times. In either case, your ERP systems limit your ability to innovate.

### Extend Your ERP System Through Sterling Commerce Selling and Fulfillment Solutions

Unlike ERP order management or warehouse management systems, DOM systems manage complex business rules that guide fulfillment decisions across different options; determining the cheapest, fastest ship-from location. While ERP systems feature strong "available-to-promise" capabilities that focus on when orders can be filled, distributed order management systems evaluate the comparative trade-offs of filling an order from various locations, and the steps required to hard-allocate and execute on a complex fulfillment plan.

### Linking all sources of fulfillment together

It's becoming increasingly commonplace for wholesale distributors to try to strategically deploy inventory and control fulfillment across a network of internal warehouses, suppliers, distributors, and 3PLs. However, they have a two-fold challenge. One is to have visibility to available inventory across that network. The other is to control order fulfillment at the same service levels as processing the orders internally. DOM is designed to manage those challenges. It becomes the system of record for fulfillment across all the disparate inventory locations. DOM is designed to deconsolidate complex orders to each line level, manage any configurations, determine fulfillment locations and monitor warehouse picking, packing, and shipping.

*"Distributed order management is the most strategic application in the supply chain today. It links demand and supply—in real time."*

Kevin O'Marah, *AMR Research Distributed Commerce Management*, August 2001

Then, decrement inventory across inventory systems, and reconsolidate the orders and invoice the customer.

DOM systems create fulfillment plans for both product and service schedules, then act as the fulfillment system of record across all the disparate fulfillment locations. The DOM system sends each part of the order to the proper distribution center where the legacy warehouse management systems take over to pick the order. As the disparate warehouse systems update their fulfillment activities, the DOM system passes that information back to the ordering system, and acts as an intermediary to make sure distributed information and processes are brokered across these fulfillment environments.

The underlying SOA lets companies design unlimited options for fulfilling complex orders, but equally important is managing change. Innovative companies need to manage changing product mixes and product lifecycles, seasonal products, acquisitions, new markets, and changing inventory strategies. It's critical to have a DOM system to extend those ERP investments with the necessary flexibility for today's increasingly complex business environments.

**Networked warehouse management**
Increasingly, wholesale distributors are trying to outflank their competition by expanding their product offerings to include value-added services like kitting, postponement, configuration, and logistics; positioning themselves as more than a distributor, but rather a higher value solution provider. Industry leaders are also looking at inventory from an enterprise-wide perspective and trying to manage it globally. A new breed of networked warehouse management systems make it possible to tailor warehouse operations to complex operations while optimizing global inventory management.

**Where ERP systems fall short**
When ERP systems were originally designed, warehouses were places to store inventory, not global networks of complex value-added service operations. Today's warehouse environments need to support wide-ranging operations from traditional fulfillment to kitting, postponement, and light assembly. ERP systems were not designed to support the wide-ranging and ever-changing operations of today's agile business.

ERP ordering systems hard code themselves to designated warehouses. If available inventory resides in other locations, then the ordering system is blind to it and the sale is lost. Worse, distributors write down many millions every year in obsolete inventory that could have been sold if it had been visible. Ineffective inventory management also negatively impacts customer service.

**Single instance for all fulfillment requirements**

Commonly, wholesale distributors run a collection of enterprise warehousing systems, collected from acquisitions supporting specific operations within specific warehouses. This mosaic of applications is a costly strategy, creating multiple code bases to support. The data latency from batch updates between systems also prevents real-time views of inventory and operations. So, companies have a delayed view of what product is committed, what orders have shipped, or if expediting an order is possible. In a world of service-oriented technology, batch operations are an arcane system design.

Today, native SOA warehouse applications provide one instance of the software to support multiple warehouse operations of varying types. This allows distributors to integrate all distribution, fulfillment, and spare parts operations through one common code base and rationalizes the need to operate and maintain multiple warehouse management systems, driving down the total cost of ownership. Through SOA, one instance can establish tailored fulfillment work flows designed specifically for each customer, order type or warehouse operation.

**Global visibility and customized workflows**

With a networked SOA-based warehouse system, inventory can be placed anywhere in the network and remain visible. Using a graphical business process modeler, workflows are built to support multiple warehouse operations. Now, warehouse space can be shared across divisions, and fulfillment operations can be tailored to a customer's exact needs. The networked nature of managing all warehouse operations through one system also provides a real-time global view of all inventory and value-added service operations.

With IT budgets and staffing cuts today, the need to optimize staffing and locations of where software applications are supported is an important consideration. Through SOA, software can run in a specific location, for example, in a low-cost operating region. The software can then be deployed globally over the Web, versus running and supporting separate servers at each operating location, further driving down the total cost of ownership.

**When change is the challenge**

Modifying any warehouse system is a daunting task. Mapping the physical space, getting work flows right, and maintaining product catalogs is complex. However, the hidden cost to warehouse systems is the cost of change. Once compiled, traditional warehouse management systems, like any enterprise application, are difficult to modify. Through its graphical interfaces, SOA workflows can be added, deleted, or edited without writing complex specifications, recoding, debugging and re-implementing.

**Transportation management**

Transportation management (TMS) is an externally-facing service that can make or break business relationships with your customers. Controlling freight costs, improving utilization and maintaining service performance are must haves. It is not enough to

assign lowest cost carriers for a given lane. Instead, freight spend and equipment need to be fully optimized across divisions in the corporation.

### Where ERP systems fall short

Transportation management is a very specialized domain. Managing detailed routing guides, changing carriers, changing customers, and customers' changing requirements are things ERP systems were not designed to do easily. Today's ERP transportation management options are either too light to be effective, or too complex to implement affordably with much chance of success.

Implementing an ERP transportation system is just the cost of entry. Maintaining the changing routes, carriers, constraints, and rates requires continual maintenance by an operations professional. Transportation management operations require continual support for onboarding carriers and managing changing communication protocols. Relying on the IT department to support the day-to-day requirements will mean the system is always catching up with changes or driving up the cost of ownership—making TMS a poor match for ERP technology.

### TMS on demand

On demand solutions provide best-in-class transportation management services on a subscription basis. Members pay out of an operating budget, and best practice functionality is pre-implemented, while ongoing improvements are added to the shipping community as part of the service. Shippers plug into an ongoing system in days, not months or years. This eliminates the risk of long implementation cycles and project success. Because of the underlying SOA-based design, modifications are a drag and drop away. Whether your customer changes carriers, you change trailer capacity, or hours-of-service legislation changes, SOA-based systems are designed to allow individual shippers needed flexibility.

### Connect once to an entire carrier community

Software-as-a-Service was created with transportation management in mind. Instead of each company connecting with their set of carriers, companies leverage a shared network of carriers, and the service manages the connections. This takes away the ongoing cost of onboarding customers and maintaining changing protocols. Because there is no on premise software or hardware to manage, much of the IT overhead is eliminated.

*"Logistics costs, overall, and as a percent of US gross domestic product (GDP) have continued to rise, up to 9.9% (to $1.31 trillion) in 2006 from 9.4% of GDP in 2005. Overall transportation spend was up 9.4% even though two huge sectors, auto and home building, were down— meaning everyone else must be spending a lot more."*

State of the Logistics Union, 2007, Council of Supply Chain Management Professionals

### Supply chain visibility

Coordinating inbound supply with customer orders is the challenge all wholesale distributors face. If you can improve visibility and control of inbound supply you can manage it like it is in-house inventory even though you don't own it.

### Where ERP systems fall short

Once again, ERP systems were designed to cast a light on internal company operations. ERP systems do not have databases to manage external business operations, nor were they designed to support cross-company business process management. Most companies have data warehousing systems that can take external feeds and report on external operations. However, they are not capable of monitoring systems in real time to proactively alert for unplanned changes in supply and demand.

### Real-time view of external inventory, equipment, and processes

Contract manufacturers, logistics providers, joint ventures in China, and agents in global markets mean inventory, equipment and business operations need tracking across the world. In order to maintain that corporate agility, the flexibility to monitor inventory, equipment, and processes in real time is essential. Flexible SOA environments are critical to changing how to capture that information, view it and respond in an increasingly external and changing world.

### Summary

Investments in core ERP systems will continue to give companies control over internal operations for many years to come. But new business strategies require additional flexibility. While companies continue to become more virtual and agile, the need for tight internal controls and flexible outward-facing systems is critical.

Building-to-order and configuring-to-order have become the norm as global competition increases. As cross-company processes grow more integrated, the flexibility to respond in shrinking cycle times will determine who thrives in the new world economy. Flexible service-oriented technologies are needed to support these changes.

**About Sterling Commerce**

Sterling Commerce, an IBM® Company, helps organizations worldwide increase business agility in their dynamic business network through innovative solutions for selling and fulfillment and for seamless and secure integration with customers, partners and suppliers. More information can be found at **www.sterlingcommerce.com.**

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