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Using IBM WebSphere to Reduce Customer Costs and Improve Overall Supply Chain Management: A Case Study on TradeMerit

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Overview

TradeMerit, a Canada-based international trade and logistics service company, helped General Motors reduce intercontinental shipping delays and costs for its auto parts with a comprehensive and mature supply chain management solution based on IBM's BPM products via a SaaS model. The solution is part of the Material Off-Shore Sourcing (MOSS) project, which was initiated by the Automotive Industry Action Group (AIAG) to improve the business processes and information exchanges that drive intercontinental shipment of goods.

TradeMerit was selected for the project in part because of the maturity of its supply chain process management solution, which is based on the use of IBM WebSphere Process Server and IBM WebSphere Business Monitor for business monitoring and development of a Web-based management console. The software as a service solution requires minimal IT investment and quickly ramps up to meet growing needs. It is also designed to minimize development and setup time and to save on training and integration costs.

> **Business Value Highlights**
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> **Organization:** TradeMerit
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> **Operational challenge:** To provide a supply chain management solution that would offer an international automaker a means to reduce its costs by drastically reducing human error in the management process
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> **Solution:** IBM WebSphere BPM
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> **Benefits:**
> - Customer saved approximately $780K in inventory costs for a single trade lane
> - 65% reduction in data errors
> - Order cycle improvement led to an additional savings of $130K

Business Problem

In the past, intercontinental supply chains have been beset by a number of problems and limitations caused by the use of point solutions involving manual processes with faxes and paper documents. This situation has been exacerbated by incomplete visibility into the various operations and growing government compliance needs. A survey of automotive practices in ocean-going supply chains conducted for AIAG showed that 79% of all data used in long-distance

supply chains is rekeyed multiple times into the various systems used in customs, shipping, and general business processes. Additionally, an estimated 15% of inbound ocean shipments experience delays en route because of inaccurate or incomplete data. The survey identified a pressing need for greater visibility into supply chain operations at multiple points. It also found that many organizations have needed to add staff to handle problems, disruptions, and other issues related to government compliance.

Implementation

The TradeMerit solution addresses these problems by providing a management platform that enables businesses to proactively monitor in real time global shipments, trade payments, and trade documentation to better control costs and compliance. To provide improved visibility into supply chains and related logistics processes, it uses a global network of connected partners combined with powerful on-demand applications.

To manage the entire supply chain in line with the business process, the company creates key performance indicators (KPIs) based on the user's business model and determines how they fit within the supply chain. The status of business processes that set the individual KPIs is determined from information gathered by TradeMerit from shippers, receivers, customs brokers, and other trading partners. The status of each event is visually represented on the management console, which can then provide real-time alerts and workaround solutions to the identified problems. Monitoring then shows if the process flow set by users is being adhered to, if the rules are being followed, and if the solutions are appropriate to the situation.

With the service, customers begin by using the graphical modeling tool to create a model of their trading partners in the trade lane along with their responsibilities. The next step is to map this model as a component within the IBM WebSphere Process Server and to generate the monitoring rules. "With this information, we can determine if the partners are following the trade lane plan and measure how well they are collaborating," explained Mr. Tarek El-Gillani, Chief Technology Officer at TradeMerit. "We have an interface for the Web and others for fax and paper documents. The integration is done through the WebSphere Process Server, using WebSphere Partner Gateway for more advanced users."

The supply chain solution consists of three major components. "First is the planning component, where someone like General Motors enters its business process," Mr. El-Gillani explained. "The second, or data management, component is where the business model gets involved with day-to-day operations. We allow people who do not have EDI [electronic data interchange] capability to enter documents once instead of having to reenter the data over and over in different documents. By using the process server, we can reuse sections from one document in another. We have a dictionary of all the data elements that are applicable across the supply chain, and we can map them from one document to another. The third component measures day-to-day operations to detect discrepancies."

In the MOSS project, General Motors is using the TradeMerit solution to manage a trade lane with a Korean supplier of auto batteries involving six logistics partners as well as government agencies, carriers, and brokers. The project was preceded by proof-of-concept exercises, and TradeMerit was the only software provider to complete the conformance testing — a prerequisite for participation in the MOSS project.

For this AIAG project, TradeMerit performed the platform selection, implementation, and conformance testing over a six-month period. One of the biggest pitfalls in business process management is trying to model something without having detailed knowledge of the business. TradeMerit started with the advantage of having three company principals with extensive experience in supply chain solutions.

In selecting the platform for the supply chain management solution, TradeMerit realized that business process management (BPM) and service-oriented architecture (SOA) would be important because of the different processes, systems, and formats used by organizations in the supply chain. After considering and evaluating a number of BPM tools and SOA platforms, TradeMerit selected IBM WebSphere Process Server and IBM WebSphere Business Monitor for the required business modeling, unification of information, and development of Web-based management consoles. WebSphere Partner Gateway was utilized for B2B interactions.

"We selected IBM WebSphere because of its functionality and the maturity of the process monitoring," Mr. El-Gillani said. "From an architectural perspective, we wanted a platform that supported open systems and was highly scalable so that we could handle hundreds of trade lanes. Because we invested in a very good infrastructure, one person can handle the technical support for 10 trade lanes and more. Also, only five developers were needed to implement the entire project."

The server merges the various services that exist within the SOA and non-SOA infrastructures, so its use of open standards and SOA-related capabilities was important. With the Monitor, the major pluses were its ability to detect nonconformance from information gathered from trading partners and its ability to perform business activity monitoring in real time.

In designing its supply chain management solution, TradeMerit sought to keep development and setup time short and to save on training and integration costs. All the business events built around the process server can be readily reconfigured, so scaling up from one trade lane to 100 trade lanes requires minimal development time and cost.

Flexibility and familiarity are the twin pillars that facilitate user training and integration. Because of the process server, the solution has the flexibility for users to customize the terminologies they will use. "If one group wants to call a business term by one name and a second group prefers to use a different one, we can present the information in both ways so no retraining is needed," Mr. El-Gillani said. "The server does the necessary translation." The task of mapping and integrating the events across the supply chain is simplified because the server takes care of the data consistency among events and their sequence.

When mapping the supply chain management solution, TradeMerit first meets with the companies to discuss their documents and terminologies so that it can optimize the supply chain processes. Alternatively, companies can do this themselves via TradeMerit's Web site. Once the setup is completed, anyone logging on to the system will find a structure and terminology similar to the one they are used to, minimizing the time needed for training. For the MOSS project, training took less than three weeks for all the partners involved.

Benefits Since Deploying IBM WebSphere

The AIAG project focused on General Motors' Korea trade lane before and after deployment of the supply chain management solution to determine and quantify the benefits. "Because we can aggregate the operational data, we can create reports to identify where savings can be realized," Mr. El-Gillani said. "Some are day-to-day operational savings, but others come from monitoring compliance to the business rules and making minor adjustments where needed."

Hard Cost Reduction

Savings from improved supply chain management can be significant. Studies have shown that the cost of delivering auto parts and raw materials and then distributing them to the production line accounts for about 10% of the cost of a car or truck, nearly the same percentage as the cost of labor. By shortening order cycle time by five days, General Motors saved approximately $780,000 in inventory costs for a single trade lane.

Compliance

A timely alert can save on penalties for noncompliance with regulations and the extra costs involved with missed shipping schedules. "For instance, you may have a 24-hour alert that a booked ship is sailing the next day and certain things need to be done to be compliant," Mr. El-Gillani said. "Unless these things are done, you may not be able to load the cargo on the ship, so you have the extra cost of expediting the shipment in a more expensive way or paying for the warehousing costs until the next ship sails. Or, if the shipment gets loaded, you could face penalties and the cost of unloading the cargo. With so many partners involved, it's easy for these types of errors to occur."

Improved User Efficiency

Some of the savings come from increased process efficiencies, such as a reduction in the manual reentry of information. "In the past, before a shipment could leave port, you had to pay someone to collect all the paperwork, including faxes and paper documents, and manually reenter the information," Mr. El-Gillani explained. "Now, because the process captures the information in the beginning, it can be generated electronically, so you save the cost of that operation. Also, the number of human 'touch points,' where somebody has to come in to change something, has been reduced by 65%, with a corresponding reduction in handling fees."

According to Mr. El-Gillani, "If a data element is entered as ABC in one document, and the business rule says it should be the same in another document but isn't, we can detect and keep track of such inconsistencies and send alerts. We can also shorten the order cycle time by synchronizing a ship's schedule with the supplier manufacturing cycle. We know when the

order was placed and when it's supposed to be ready at the supplier's location, so we can trigger the booking of the ship for a certain day." The savings from improved process efficiencies amounted to an additional $130,000 for one trade lane.

IBM WebSphere Return on Investment

The three-year IDC ROI analysis is based on initial and annual investments compared with the benefit cast over that time frame. Benefit includes the revenue generated by the business activity discussed in this case study. Investment includes the initial purchase price and two full-time equivalents (FTEs) required for deployment and ongoing maintenance. In this case study, IBM WebSphere offers an ROI of 337% and payback occurs in three months. Table 1 displays the ROI results.

Table 1.

Three-Year ROI Analysis		
Benefit (discounted)	$	3,151,343
Investment (discounted)	$	721,787
NPV	$	2,429,556
ROI		337%
Payback		3.0 months
Discount rate		12%

Source: IDC, 2009