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The 100
Agile

IN THIS STORY

ABF FREIGHT SYSTEM

DAIMLERCHRYSLER

FEDEX CORP.

GKN AEROSPACE NORTH AMERICA (EAST)

Agile companies can adjust their operations to cope with unexpected events, whether it's a surge in new business or a backlog in the warehouse. Four CIO 100 honorees tell how IT makes them and their trading partners flexible.

The Supply Supply Chain

BY TRACY MAYOR

FAXES. PHONE CALLS. Desk-bound quality specialists storing thousands of pieces of paper in hundreds of binders.

These were the ways that DaimlerChrysler used to track development and resolve quality issues with the thousands of companies that design parts for the cars, trucks and commercial vehicles manufactured by its Chrysler Group unit. Problem was, when a drive train was one-eighth of an inch too long or a widget a half-centimeter too wide, it could take up to three weeks to notify the supplier, fix the problem and insert the remedied part back into the design process.

Now those suppliers instead use **Powerway**, a Web-enabled quality management system and supply chain collaboration network. Faster and more accurate than the paper-based processes it replaced, **Powerway** helps Chrysler identify potential design

and engineering conflicts in theory before they even occur in reality. That in turn helps the company design new cars much faster—in months rather than years—which is a key consideration in an industry where consumers are fickle, competitors are tough, and time to market can make or break a company.

The automotive industry is one of many in which a nimble supply chain—one that can respond quickly to changes in customer demand—plays a crucial role. An agile supply chain is fast from end-to-end, but more important, it's flexible. Lean operating practices and manufacturing principles enable agile supply chains to accommodate or bypass disruptions smoothly.

"Some of our plants can require over 450 truckloads a day. A supply chain breakdown can bring an entire assembly line to a halt," says Susan Unger, DaimlerChrysler senior VP and CIO.

“For us, a robust, agile, IT-enabled supply chain is critical.” DaimlerChrysler comprises the Mercedes and Smart Passenger Car Group, the Chrysler Group and the Commercial Vehicles unit; it commands a global supply chain of staggering proportions—104 plants in 37 countries, 14,000 suppliers and 13,000 sales outlets in 200 countries. Even so, in the United States, the company’s Chrysler Group, which includes the Chrysler, Dodge and Jeep brands, “has always been one of the smaller domestic players,” says Unger. “We have to leverage our supply base much more heavily than a GM or a Ford.”

DaimlerChrysler is among several CIO 100 honorees, including ABF Freight System and GKN Aerospace North America (East), that stand out for using IT to create a supply chain that’s not just efficient, but one that’s nimble and predictive—that is, able to anticipate change and help companies adjust to that change and accommodate it on the fly. These companies have tapped technology to gain insight into and extract knowledge from business and manufacturing processes that allow both the corporation and its suppliers to respond in record time to changes in the marketplace.

An agile supply chain isn’t just fast and flexible; it’s transparent: Managers can “see into” systems and, when necessary, make ad hoc adjustments that keep manufacturing and delivery processes aligned with customers’ needs and their own bottom line. “A few years ago, IT was all about shaking the pennies out of the supply chain. There are still pennies to be shaken, but now there’s a big drive to create more agility,” says Gene Alvarez, a senior program director at Meta Group who tracks supply chain trends. The role of the CIO, he says, is to bring the business closer to its suppliers and improve the “sensing” abilities of the organization—that is, its ability to detect and respond to changes in its supply chain.

Here are four ways that DaimlerChrysler and other agile supply chain leaders are using IT to become flexible.

1. LOOK BEYOND THE SHOP FLOOR.

Supply chain managers must pay heed to manufacturing and shipping processes, but



SUSAN UNGER, DaimlerChrysler CIO, says an agile supply chain helps the automaker align production with customer demand.

companies that are truly committed to flexibility look beyond the factory floor to make their supply chains more agile.

The Chrysler Group, for example, considers every step in the vehicle production and sales process as part of its supply chain, starting with the very first stage of vehicle design and ending with its service and repair. “Too many people think of the supply chain as only manufacturing, but it covers pre- and post-build as well,” says Unger.

That’s why Chrysler has deployed a constellation of systems that automate and streamline every part of its supply chain: One of these systems, the Global Supplier Portal, presents a unified interface and infrastructure

for transactions between suppliers and all of DaimlerChrysler. Another, the Integrated Volume Planning Application, gathers sales data and relays it back to production planning applications and, from there, to suppliers so that, for example, dealers will have enough Dodge RAM trucks with 15-inch rather than 16-inch wheels if that’s what’s selling. And at the earliest stages of design, Chrysler and 3,400 of its suppliers use Powerway to track new parts through nine quality control “gates” before they’re certified for use on production lines. (Powerway was first adapted by Chrysler for the automotive industry in 2001; it’s now considered an industry standard, Unger says.)

Identifying and addressing quality problems in the earliest part of the design stage eliminates compatibility problems, explains Jeff Mowry, senior manager of supplier quality systems for IT management. That in turn allows the company to design and bring more quickly to market vehicles that incorporate advances in technology, safety and consumer preferences, Mowry says.

2. SHARE LOTS OF DATA

Companies become agile by gathering data from the widest possible array of sources and

Agility in Action

— Sales and inventory data relayed back to production planning systems increased ability to manufacture products based on current customer demand

— Real-time shipment status data avoided bottlenecks by routing deliveries through the least busy distribution centers

communicate more quickly, identify and resolve problems faster, and stay fleet in the face of the competition.

Rock or South Chicago center, thereby preventing a bottleneck in Kansas City that Kemp says could take days to work through. Not only are such backups costly to ABF, they disrupt their customers' supply chains as well. "NetLink gives us the agility we need to better neutralize those kinds of events," he says.

In a similar vein, the Chrysler Group uses its production control system, PC Portal, to keep second-by-second tabs on some 400,000 events—gathered from suppliers and carriers worldwide—that affect its manufacturing processes. For example, PC Portal can tell a

Armed with data delivered to handheld devices, the ABF Freight System drivers can better react to unexpected events, from a hurricane to a blown truck tire, says Wes Kemp, vice president of terminal operations.



putting it to timely and effective use. DaimlerChrysler's Global Supplier Portal allows the company to do this by reaching widely and deeply into all areas of its business.

Hosted by Covisint, a supplier of e-commerce technology for the automotive industry, the Global Supplier Portal presents a unified interface and infrastructure for every type of interaction between a supplier and DaimlerChrysler. The 6,000 suppliers that have registered to use the portal gain a common user interface and password for interacting with DaimlerChrysler's many different business groups. And they do so, to the tune of 25,000 hits per day, according to Mowry.

As with Powerway, Covisint is available to the entire automotive industry, but the breadth and depth of DaimlerChrysler's use of the portal sets it apart from the competition, Mowry claims. "We are about to be using it globally across all our brands, and we have many more users and more hits per day than the competition," he says. Using the Global Supplier Portal to share information across business units helps all the divisions commu-

3. PUT TIMELY DATA TO WORK

Advances in mobile technology have made it feasible for companies to capture manufacturing, production and delivery data as it is generated. Agile companies go the extra step by building supply chain systems that can monitor and react to that data as events unfold.

ABF Freight System uses a series of homegrown wireless applications called NetLink to manage how freight flows through its network. Where drivers and other personnel previously worked with printed instructions that had been prepared hours or even days in advance, they now carry handheld devices connected to wireless networks that transmit delivery data every second. Armed with this data, the company can avoid bottlenecks and better react to unexpected events, from a hurricane to a blown truck tire, says Vice President of Terminal Operations Wes Kemp.

For example, workers on the loading dock can now check the status of the closest ABF distribution center. If a surge in business threatens to overwhelm the Kansas City center, a worker can redirect a shipment to the Little

vehicle seat supplier exactly when a seat is needed by a Chrysler assembly line, as well as when a shipment should be delayed. The parts arrive on the floor and are delivered to the assembly line operator within minutes, or sometimes even seconds, of being needed, but not before. Some 95 percent of Chrysler Group's parts and components are shipped JIT (just-in-time) and, thanks to a sequenced parts delivery (SPD) program, delivered to its plants in the same order the vehicles are assembled. JIT and SPD eliminate secondary storage, reduce excess transportation and minimize inventory, but leave little room for errors or miscommunication. "Migrating to JIT shipments and reducing inventory levels puts extreme pressure across the entire supply chain; so when we do have an adjustment, we have to be coordinated," explains Kathi Vernaci, senior manager of plant supply systems for the Chrysler Group. The PC Portal facilitates such coordination.

4. GET CLOSE TO YOUR PARTNERS

To be agile, companies need to know what's happening beyond their own walls. One slug-

gish supplier upstream or one backed up customer downstream can hobble even the nimblest supply chain. To avoid such situations, companies need to get digitally close to enough of their partners to know when their shortages and overages are happening.

GKN Aerospace North America (East), a supplier of engine parts for aircraft and aerospace vehicles, knows—down to the hour and minute—the needs and wants of its largest customer: Boeing.

GKN Aerospace North America (East) was born in 2001, when aerospace giant Boeing decided it wanted out of fabrication to concentrate on assembly and sold its division as a separate company to GKN. Even so, the company's supply chain wasn't fully integrated with Boeing because Boeing was adopting new approaches to procurement, such as minimum and maximum inventory thresholds and flexible scheduling.

The challenge, says Gregg McDaniels, an applications manager at GKN, was to develop a system that could align GKN's production with Boeing's consumption. The result is Sentinel, GKN's event-driven manufacturing system that watches key indicators in Boeing's production systems via a Web-based portal and reports back to GKN's ERP system. Sentinel responds automatically to Boeing's demand by increasing, decreasing or shutting down GKN's production systems according to parts usage.

The supply chain flexibility enabled by Sentinel has returned a 38 percent reduction in cycle times for products and a 35 percent reduction in inventory, which amounts to some \$25 million saved. The company has also reduced its workforce by 20 percent because Sentinel tracks information about changes in the supply chain that were previously tracked by analysts.

In developing Sentinel, McDaniels sat down with key Boeing personnel to capture system requirements. "We had sales order analysts and contract and pricing specialists, shop-floor control guys and ERP analysts," McDaniels lists. They provided feedback about the features that would best benefit Boeing, as well as a forum for the Boeing officials to get their questions answered. "We

The Shipping News

Data from logistics suppliers creates pathways to agility

SHIPPERS OF ALL SIZES and specialties have invested heavily in IT to become more agile and efficient. For ABF Freight System and FedEx, two CIO 100 honorees in the logistics business, a byproduct of these investments has been access to data about customers' shipping practices that the customers can use to improve their internal agility.

"A lot of times, we know more about our customers than they do—how they're responding to events," says Robert Carter, FedEx executive vice president and CIO. Customers can become more flexible simply by knowing exactly when a delivery will arrive and what will be in it. For example, a test lab for bone marrow samples (which must be processed almost immediately after they're received) uses data from FedEx to forecast its staffing needs for the next day. "They're no longer just reacting to how many things show up," says Carter.

Roughly 25,000 customers (accounting for 80 percent of ABF Freight System's annual revenue and shipment tonnage) use its eCenter e-commerce infrastructure to track, redirect or merge shipments en route. In addition, ABF's decision-support and demand-forecasting applications help customers view their shipping histories to pinpoint inefficiencies and missed opportunities.

NGK Spark Plugs USA uses daily shipping reports from ABF to track materials that the company has ordered shipped from its suppliers to its subcontractors. If a subcontractor says he needs more electrical connectors, "I can use the report to see what shipments are coming and expedite an order," says Materials Group Supervisor Doug Erwin. That ability to react quickly speeds up NGK's overall manufacturing process. Furthermore, by looking at his company's shipping trends over a monthlong period, Erwin is able to identify ways he can consolidate regular shipments, which both saves NGK transportation costs and gets parts where they need to be ahead of schedule.

—T.M.

needed their buy-in, and this was the best and quickest way to get it."

Why would Boeing, wrestling with its own problems caused by the ongoing aerospace industry slump, invest the time to help what was now a separate company improve its supply chain? "The better GKN [does] business, the cheaper we can get our product from them," says Cassandra Erdelac, a general procurement supplier manager for Boeing Integrated Defense Systems. "If GKN can't give us a part on time because one of their raw materials suppliers is late, it doesn't do us any good not to know about that. Through the supply chain, everybody is linked."

In the past decade, information technology has radically transformed the supply chain from a world of purchase orders and bills of lading to a universe of digital data swaps. The challenge now, as CIO 100 honorees demonstrate, is to use the opportunities presented by advances like real-time data availability, global communication and business-partner alliances to create a supply chain that's not simply fast, but agile as well. **CIO**

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