

## The New Supply Chain: Fulfilling the Promises of the Web and ASPs

### EXECUTIVE SUMMARY

As examples of over-hyped IT strategies that experienced market nosedives, e-business and one of its offspring the ASP (application service provider) have few rivals. After being heralded as the future of computing a scant four years ago, the Internet was humbled by the dot bomb crash, and ASPs, which allow remote hosting of software by external parties, seemed to drop off the face of the earth.

Both the Web and ASP strategies, however, have quietly gained footholds in healthcare in what used to be a back-office function: the supply chain. Indeed, the healthcare supply chain is fast becoming an example of how early promises of the Web—ubiquitous, inexpensive, easy to install and use—can be fulfilled. As hospitals and healthcare systems struggle with the complexities, cost and long-term challenge of clinical IT strategies like CPOE, they're finding they can reengineer antiquated supply chain processes for comparatively quick returns.

It's none too soon. Provider supply chain operations are drowning in manual tasks and an embarrassing lack of decision-making data. Even more so than the revenue cycle, the healthcare supply chain is a straightforward operation transformable with timely and accurate information and automated process support. It is literally

and figuratively a marketplace that can be made more "perfect" by well-informed buyers.

In this issue of Information Edge, we highlight four provider organizations that have automated their supply chains—Ascension Health, H. Lee Moffitt Cancer Center and Research Institute, Providence Health System and the University of Colorado Hospital. We also talk to Scottsdale Institute partner Neoforma, which provides Web-based supply chain management solutions.

Automating the supply chain is part of the larger reengineering occurring in the nation's health system. Providers find the improved efficiency and quality from the new supply chain carries over to the entire organization, including patient care, because of the automation and improvement of cumbersome workflows that lie at the heart of the organization.

### Beckoning market

The supply chain constitutes 30% of the hospital operating budget, according to Bob Zollars, CEO of San Jose, Calif.-based Neoforma Inc., which provides Web-based solutions to automate manual supply chain processes and facilitate communication between buyers and suppliers. After labor, he says, it's the single most expensive item for hospitals.

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Bob Zollars, CEO,  
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## neoforma

With 60% of hospitals losing money or barely breaking even last year, there's a surge of interest in cutting costs across the supply chain, Zollars says. Neoforma is aiming to tap into that interest. It already counts 1,000 hospital and 370 supplier customers linked together with its Web-based solutions.

The opportunity is huge. Zollars estimates total U.S. sales of medical products and supplies at \$200 billion a year, involving 22,000 suppliers and 5,800 hospitals. It's a highly fragmented industry with great disparity among those suppliers and their hospital customers in terms of IT capability.

Zollars ticks off the numbers: half of all hospital purchases are made off-contract; 40% of buyers' time and 70% of accounts payable time is spent processing manual orders; 35% of orders must be reworked. He says order management systems can reap a 1% savings; add a contract management system and grab another 1.5% savings. For a hospital with a \$100-million supply budget, that translates to \$2.5 million in savings.

### Aging software

Most materials management information systems (MMIS) are seven-to-10-years old and based on the old DOS operating system rather than Windows. That's why Neoforma has configured its Web-based supply chain management solutions to be compatible with most legacy MMISes.

Within its solutions, the company offers a set of reporting tools that enable hospitals to make decisions based on information about products, pricing, contracts, and

order discrepancies in the supply chain. Not unlike current efforts to reengineer the revenue cycle, which involve correcting errors at the beginning of the process to avoid bigger problems downstream, automating the supply chain involves cleaning up orders prior to invoicing.

### Buying by the Bay

Two years ago, H. Lee Moffitt Cancer Center and Research Institute in Tampa, Fla., which spends \$150 million on supplies each year, was hamstrung by manual processes that caused it to take a glacial 17 days to get a purchase requisition order placed. As the third-largest cancer center in the country, with more than 170,000 outpatient visits each year, Moffitt had to do something to clear the bottleneck.



The cancer center's solution was to address the procurement problem as part of the larger ERP issue, investing \$2.6 million in a Lawson software package that included procurement, financials and HR/Payroll suites. Installation required 10 months.

Using the new workflow engine made it possible for the organization to automate the purchase of 86% of supply items by more than 500 requisition users—management assistants, nurses and ward clerks—throughout the organization, who could now place orders online and get them electronically approved by managers before being transmitted directly to suppliers. The new system was immediately successful: it cut to 2.5 days the time it previously took from order requisition to the time it hit the vendor, a huge 85% drop.

"The majority of information is being captured on the front end," notes Ron Doremus, Moffitt's VP and CIO. "Now, 85% to 90% of all orders are sent EDI or e-fax," he says. An added safeguard is that vendors can electronically review orders—and help

***Total U.S. sales of medical products and supplies are estimated at \$200 billion a year, involving 22,000 suppliers and 5,800 hospitals.***

the cancer center prevent unauthorized purchases by staff.

### Quick payback

The front-end requisitioning component of the system uses Internet Explorer as a Web browser which launches the Lawson Web server on Moffitt's intranet. Requisitioners place orders just as they might do in Moffitt's clinical system.

A study prior to acquiring the entire system indicated it would pay for itself within 2.25 years, with the majority of savings from procurement and materials management. So far, that looks accurate. Data that's now four months old identified a cut of \$1.9 million in enhanced inventory management capabilities along with the ability to support significant growth without having a linear increase in labor expenses in slightly over two years.

Doremus says the previous mainframe-based system provided no access to information such as supply volumes or expenses. That became even more of a handicap as the cancer center began developing an additional 600,000 square feet of clinical space, doubling Moffitt's size. An added benefit of the system is that no new materials management staff will be required to support the vast new space.

Automating the supply chain has caused Moffitt's materials management productivity index—the number of FTEs required to support a combination of patient days and clinic visits—to skyrocket to a healthy 170%, according to Doremus. "Since we've automated we've been able to add volume without adding FTEs," he says.

### Benefits for patient care

For a cancer center like Moffitt, such savings have a direct impact on its clinical mission. "The majority of every dollar saved goes to research we fund and we're a translational research institute, which means the therapies we develop are practical ones that we can immediately apply to patient care," Doremus says.

There are challenges, of course, but they're the same as with any new system implementation: in order to achieve the benefit it's necessary to step back and envision what the future state will be, and not just replicate current systems and processes. "Our group never stops trying to make better use of the new system to optimize the ERP process," he says, adding the now familiar CIO refrain that such initiatives must not be driven by IT, but finance, materials management and HR.

### Managing a country-wide supply chain

When you're manager of the supply chain for the largest non-profit healthcare provider in the country, you deserve the rank of CEO, and that's the case with Arnie Kimmel. As CEO of supply chain at St. Louis-based Ascension Health, he oversees materials and supplies of a far-flung enterprise with 67 acute-care hospitals and multiple other types of facilities in 20 states and the District of Columbia.



Arnie Kimmel, CEO, Supply Chain, Ascension Health, St. Louis



Ascension Health resembles a Fortune 500 company or government agency in its appetite for supplies. The organization has more than 100,000 employees and spends \$1.4 billion on supplies yearly—not including \$400 million in pharmaceuticals—and it established the CEO of supply position partly to give it status equal to its many hospital CEOs.

Ascension Health is only four years old, arising from mega-mergers in 1999 and 2002. "When we came together, the first order of business was to determine exactly what the advantages of being big were.

### Upcoming Events

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**November 3**, "Scottsdale Institute/Leapfrog Group Survey Results Review." David Classen, MD, VP, First Consulting Group ([www.fcg.com](http://www.fcg.com)) reviews results from an SI member survey designed to uncover barriers and success factors in implementing the Leapfrog Group recommended Patient Safety Practices of CPOE and Intensivist Staffing. Dr. Classen shares his own views about what he sees in the marketplace and facilitates an open discussion.

**November 5**, "SNOMED: What's in it for us?" Please join us as Diane J. Aschman, MS, RPh, Vice President and COO, and Joann Skiba, MBA, Director, Business Development, SNOMED® International, College of American Pathologists ([www.snomed.org](http://www.snomed.org)), provide an update on the recent HHS licensure of SNOMED terminology and its resulting availability to all health systems and vendors. Learn how to integrate this important terminology into your systems planning and quality improvement efforts, as well as what you can expect from your vendors in the next year.

*more events on next page*

*Upcoming Events continued*

**November 12,** "Fletcher Allen Case Study: System Selection." Samuel McDowell, PhD., Director of Strategic Technology Planning, reviews his recently published material on Selection Methodology and how it has been used in successful business as well as clinical selections. See [www.fahc.org](http://www.fahc.org).

**November 13,** "Six Sigma Results at Northwestern Memorial Hospital." Jay M. Anderson, Director of Operations and Quality, Northwestern Memorial Hospital, Chicago, IL ([www.nmh.org](http://www.nmh.org)) is a former Six Sigma Black Belt with GE Capital, where he participated in the implementation of GE's Six Sigma program. He will describe the NMH "Best Patient Experience" goals and objectives, and how specific projects to support Effective Care, Safe Care and Coordinated Care have been deployed using the Six Sigma methodology.

**November 18,** "AMR Benefits Measurement: Allina's Approach and Results." Dr. Brian Anderson, Chief Medical Officer and Sharon Henry, Director of Benefits Realization at Allina Hospitals and Clinics ([www.allina.com](http://www.allina.com)), and Doug Thompson, FCG ([www.fcg.com](http://www.fcg.com)), describe the AMR benefits measurement approach they are using to demonstrate the value delivered to the ambulatory setting.

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Number One was the supply chain," says Kimmel. In 2000 the organization thought it saw an opportunity to carve savings of 6% from the supply budget by 2005, which at the time amounted to \$64 million.

That figure has grown as improvements to the supply chain have been made. The target savings for 2003-2004 is \$50 million and for 2005, \$75 million. Ascension Health's strategy has been to combine technology initiatives with a move toward a limited self-contracting capability for hospitals and a streamlining of supply distribution.

### Speaking the same language

On the technology front, the delivery system did what Kimmel says sets it apart from many peers: it left the legacy management systems in place while integrating them with what it dubbed a "Global Catalog." Not unlike efforts to establish a standardized, IT-based clinical nomenclature among hospitals that use different terms for the same ailments, the Global Catalog aims to link like products regardless of what they are called in the disparate MMISes used by Ascension Health's hospitals. For example, one hospital might use the term "4x4 gauze pads," another "gauze pads, 4x4." Installation of the online catalog began about 18 months ago and 75% of the standardization is complete.

"It was an enormous undertaking," says Kimmel of the process to map the Global Catalog. Using an outside consultant, Ascension Health brought together a large group of clinicians from all its hospitals to gather together every definition, every label of gauze pads and thousands of other products at the level of the manufacturer's catalog number. OmniBuyer software from OmniCell was used to link all the disparate MMISes.

"The beauty of this for Ascension Health is that each hospital's system can still call a product what it has always called it," says

Kimmel. About 60% of Ascension Health's hospitals are linked centrally through OmniCell's servers in northern California via an ASP model, creating a real-time data warehouse, a repository that allows executives to review and compare such factors as pricing and utilization. Global Catalog acts as a filter or translator that feeds the repository with standardized data that allows apples-to-apples comparisons.

### Getting better deals

Contracting was the second area of improvement. Ascension Health had largely decentralized its purchasing, allowing each hospital to order its own supplies, but it contracts selectively on a national basis.

Ascension Health is an owner/member of Consorta, a group purchasing organization (GPO) owned by 13 Catholic healthcare organizations. Ascension Health's multi-phase strategy was to consolidate all GPO activity into one office, develop self-contracting capability so Ascension Health can contract directly with a supplier and develop a value-analysis capability for such contracts.

To coordinate clinical purchasing, expert teams were created in laboratory, pharmacy, OR, cath lab, general medical and imaging to determine the clinical implications of purchasing and product quality. "That's so we can address the issues of quality and standardization," says Kimmel.

Finally, the organization wants to streamline its distribution. While Kimmel acknowledges it needs to do a lot more in this area, in the last two years it did sign what he terms "good deals" with Medline, its primary med/surg distributor, and McKesson, its exclusive pharmaceutical distributor.

Given that the overall supply chain strategy is projected to be ahead of its original 2005 savings target by 17%, Kimmel is a

believer. “We’re confident that we’re being successful.”

## Rockies online

Declining reimbursements and expanding work demands forced the University of Colorado Hospital in Denver to seek ways to cut costs in its supply chain. The medical center operates a 400-bed hospital and five clinics with a \$350-million operating budget of which it spends about \$2 million a month on supplies, not including pharmaceuticals or capital equipment.



“The biggest factor was that we had more work than we could handle just in purchasing alone,” says Jan Burda, director of materials management at the medical center, adding that receiving and invoicing was also overwhelmed. “We were not going to be able to add more workers and I wanted my staff to help customers with more challenging tasks.”

Those customers are end users from the cath lab, OR, nursing units and any other department placing orders. With materials management staff distracted with manual tasks—retrieving purchase order numbers off of faxes, keying requisition numbers into the 11-year-old MMIS, calling vendors to verify orders, trying to read handwritten orders—they were frequently unable to focus on customer service needs that typically require time and effort because clinicians and other users often have specific requirements for a product but don’t know exactly which products meet those demands.

“That’s our contribution to patient care,” says Burda. “If they don’t have the right supplies, it impacts patient care.”

## Dumping the fax

That’s why the university hospital opted for a Web-based order management system from Neoforma that links the hospital’s materials management solution with suppliers, automating many of the manual tasks that crippled the entire supply chain. For example, with the old fax-based system, a confirmation might or might not come back over the course of several days. With the new system, such validating information comes back within the same day of the order.

“The old system was very, very inefficient,” recalls Burda.

If the OR has scheduled a case for the following Tuesday, specific supplies can be ordered for that surgery a day before with the virtual guarantee that they will be there. “Before, it was kind of a crap shoot,” says Burda. “Clinicians would try to compensate for the unpredictability of the old system by hoarding supplies. Instead of just-in-time inventory, we had just-in-case inventory,” says Burda, adding that the practice is a common one with hospitals operating with largely manual supply chains. “If we could see this country’s [hoarded] hospital inventory, we’d be shocked. But nurses and physicians want to take care of patients, that’s their primary goal, and that’s why they do it. I want to streamline the order process so they don’t need to ask why a certain product is not on the shelf.”

## Haves and have nots

Burda says the healthcare industry has made huge leaps over the last five years in terms of automating the supply chain. That’s true even though some vendors, especially smaller niche suppliers, still do not have electronic ordering capability. “The limiting factor is the technology that people don’t have,” she says.

*Upcoming Events continued*

**December 3**, “Close Call Reporting Systems: From Aviation to Patient Care.” Sherry Martin, Vice President, Quality Management, UTMD Anderson Cancer Center ([www.mdanderson.org](http://www.mdanderson.org)) provides an update on the progress of the Close Call Reporting System developed using principles and methodologies transferred from aviation and includes the use of human factors research to better understand the etiology of errors. Now implemented in two sites, with implementation planned at three additional sites over the next six months, the data management team will share early results and lessons learned.

**December 4**, “Rockford Health System Case Study: Implementing Voice Recognition in Medical Records.” Dennis L’Heureux, CIO, reviews the results and lessons learned from their implementation of this technology, with an emphasis on physician adoption. See [www.rhsnet.org](http://www.rhsnet.org).

**December 12**, “CPOE: Update on Implications from the Latest IOM Report on Patient Safety and review of A Report on Community Hospital Results.” David Classen, MD, First Consulting Group, reviews the latest (11/03) IOM Report and a research report on CPOE progress in community hospitals. The research report is available at both [www.fcg.com](http://www.fcg.com) and [www.chcf.org](http://www.chcf.org).

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*Upcoming Events continued*

**January 13,** "Six Sigma Results at Heartland Health," Mike Dittmore, Black Belt Team Leader, Performance Improvement, Heartland Health, St. Joseph, MO ([www.heartland-health.com](http://www.heartland-health.com)). Mike provides an in depth look at applying Six Sigma techniques to revenue cycle and medication administration processes, and the dramatic results Heartland has seen in just 2 years. He also reviews Design for Six Sigma, used in conjunction with significant IT implementation, and shares their approach to measures, accountability, and a variety of training tools.

**January 19,** "Six Sigma Results in Laboratory Services at Memorial Hermann Healthcare System," Melody Peeples, MEd, MT (ASCP), Process Excellence Coordinator, Laboratory Services, Memorial Hermann Healthcare System, Houston, TX ([www.mhhs.org](http://www.mhhs.org)). Melody will review practical applications by presenting the Executive Summary of the Six Sigma project that was conducted for purposes of initial Black Belt certification and outline other laboratory improvement initiatives with results to date.

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While the university hospital was already doing EDI, Neoforma provided an information loop back to the hospital, something its MMIS couldn't do. The hospital is scanning in all of its local supply-contract files so those are available online as well as the national ones. "I work out of two offices. And need to be able to pull up information when I need it," says Burda.

The University of Colorado Hospital began implementing the Neoforma solutions through Marketplace@Novation, the online exchange offered by its GPO Novation two years ago and now has 17 suppliers linked through it, including its general medical/surgical supplier. Still, that's only about 40% of its total vendors, so it still has a ways to go before it's completely automated its supply chain.

But the early returns have been impressive: a study done when only 10 suppliers were connected online found that the materials management staff was able to save 1,155 hours a year.

### **New hospital, same staffing**

"I can't keep increasing my staff. I have a responsibility to keep my costs down," says Burda, who has been able to maintain the same staffing levels even in the face of the hospital opening a brand new 100-bed hospital.

The old DOS-based materials management system was obstructing the hospital's ability to move more supply orders to EDI, which not only allows electronic processing of orders but confirmation back to the buyer as well. Still, Burda and her staff wanted more than that, including such information as price changes, order numbers and so on.

Next on the horizon is to select a new MMIS—Neoforma provides the value-added Internet connection between the hospital and its MMS. It can also provide a materials management solution if the cus-

tomers so chooses—that will enable the hospital to do more electronic invoicing and receipts. Also, the organization will try to put as many vendors on the Internet as possible. And keep and maintain accurate contracting information in its database, eliminating the need to weed through paper records.

"We're now beginning to be more aware of the issue of contract and pricing discrepancies. You can pull up a screen and view six different POs, identify the contracts person, all price discrepancies within a contract or several. Instead of correcting the same problem over and over again," says Burda.

Despite the progress, she acknowledges that the hospital is "not leaps and bounds ahead" in terms of supply chain, especially given that its MMIS is about to be sunsetted at the end of next year. But that's also a validation of the Web-based strategy. "It just goes to show that you can do this too. You don't have to have the latest MMIS. The Web-based system can fill in the gaps for a lot of people," Burda says.

### **Back to the future**

Filling in the gaps is an understatement when it comes to Seattle-based Providence Health System, a 19-hospital delivery system covering parts of Washington, Alaska, Oregon and Southern California. As director of supply chain management for Providence Health's southwest Washington region, which includes large St. Peter Hospital in Olympia and a smaller facility in Centralia, Tim Hagler has had to contend with an MMIS that redefines the term legacy.

"We've had the same system since 1985," he says, adding, "It doesn't even do date recognition. We had to trick it into thinking that it's 1903 [in order for it to work in 2003]." However, Hagler and his staff are

making the most of the ancient system, to say the least.



“We wanted to leverage our existing investment in ERP and augment it with something that could help focus on e-commerce, so we could put more of our buying through an e-commerce portal.”

By adopting Web-based solutions through Marketplace@Novation, the organization was able to jump from placing an electronic order with three suppliers—with whom it required three steps—to 40 suppliers requiring only a single step, and without having to dump its existing MMIS. “It literally took us that giant leap within only a 12-week process and with little IS help,” says Hagler.

### Working hard but not smart

Similar to the University of Colorado Hospital, the Providence region’s supply chain staff was drowning in manual processes. “If you benchmarked our productivity, we were heavier than others. People were working hard but most of the time it was on task management in the ordering process. We needed to reduce the time it took to process orders,” he says.

By overlaying the new Web-based order-management system on top of the old but still reliably functioning MMIS, the organization was able to cut order-processing time by 25% and redirect staff to focus on cost reductions that yielded a savings of \$200,000 right off the bat.

Given its aging MMIS “infrastructure,” Providence Health decided it was necessary to establish five guiding principles in its supply chain streamlining as a means of mapping its way out of the supply chain dark ages:

1. Find an e-commerce champion in the current staff;
2. Establish specific, measurable goals;
3. Define expectations for the system;
4. Align key business processes so they worked with the new system;
5. Determine a peer group against which to benchmark.

The approach was validated when Hagler threw the On switch and the new system seamlessly accommodated all of the information related to Providence Health’s 40 electronic suppliers and their individual transactions. “It sucked the data out like a vacuum,” he says.

### No technocrat

For the first time the organization didn’t have to call and confirm orders. Confirmation data was automatic and it was easy to review only the exceptions, allowing a manager like Hagler to concentrate on non-technical issues. “I’m so little of a technocrat. To me it was just magic,” he says, adding that the Web makes the system easy and inexpensive to install and use.

He especially likes the fact that as each day passes the system isn’t getting older. That’s because the system is built upon an ASP model, which allows software management by the vendor off-site. “I breathe easier. An email comes across my desk saying that we’re doing an upgrade to your e-commerce system. I don’t have to spend a dime. Somebody some place is pressing the buttons and we have another up-to-date system,” says Hagler.

The vendor handles version control of the software and keeps Providence Health current with all its suppliers. “That’s how the Web is paying off. We’re all getting the same update,” he says.

Hagler expected all of the productivity gains to come from the purchasing department. However, most of the gains came from

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***“In supply chain management, we see ourselves as ‘Resource Optimization’ professionals supporting the clinical effort. That’s our mission and ministry.”***

streamlining the inventory control process, resulting in a 1.5 FTE saving immediately with only 15 suppliers online. Another productivity gain came from accounts payable, part of the regional revenue cycle operation, which dropped to 30 to 40 invoices in suspension from a whopping 140 at any given time, and reducing FTEs.

### **Random acts of savings**

But the real fun begins with the new ability to analyze the supply chain and identify less expensive products or better utilization. “It looks like random acts of cost savings. The staff is now able to shift their focus from processing orders to more strategic value management,” says Hagler.

Now that order management has been automated, Providence Health’s next step is to do the same for contract management. With all its supplier contracts, both national and local, loaded into the Web system, the organization will have tools to determine which contracts are superior for what products.

Hagler is acutely aware of his relationship to the organization’s patient care mission. “I feel it every day. In supply chain management, we see ourselves as ‘Resource Optimization’ professionals supporting the clinical effort. That’s our mission and ministry. The order-management system helps

us assure that products are indeed coming in. We know at a glance.”

Indeed, he just received his first “Stock Out” report from the system telling him that a solution used in dialysis was being taken from the store room without requisitioning. The alert taught the supply chain team the valuable lesson that not all manual processes should be extinct; specifically, staff still needed to walk the storeroom twice a week inspecting the shelves.

Says Hagler, “I would not have thought we would become the poster child for e-commerce because we have such an antiquated MMIS.”

### **Conclusion**

Helped by prudent use of the Web, automating the healthcare supply chain is a strategy whose time has arrived. Most hospital supply chains are rife with inefficient manual processes and a lack of accurate and timely data. Despite the fact that many hospitals’ materials-management systems are moribund, e-commerce strategies using the Web and the ASP software model can dramatically improve operation of the supply chain while leveraging those legacy investments. The results: cost savings and better quality for medical products and patient care. Maybe the Web has finally arrived.



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