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2. 実用新案登録

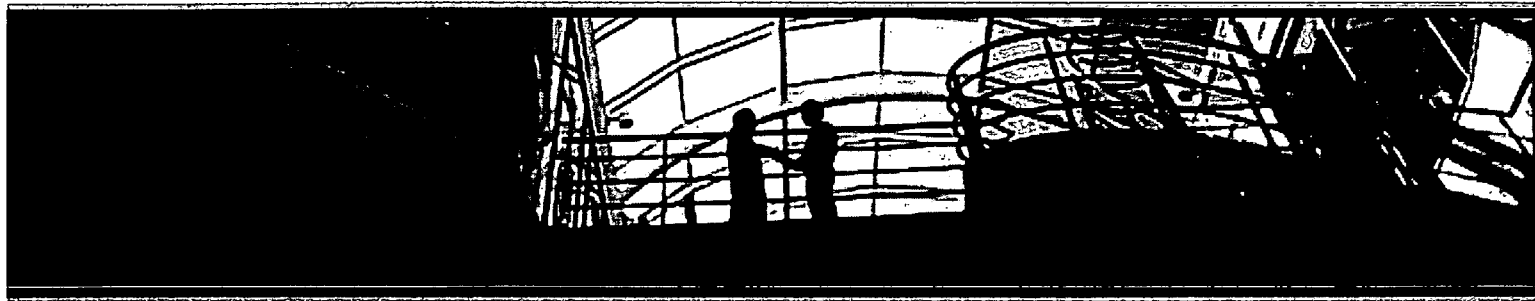
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3. その他

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G. 知的所有権の取得状況

1. 特許取得



Data Synchronization in Healthcare: A Solvable Problem

AN EXECUTIVE PRIMER

by William L. Rosenfeld & John L. Stelzer

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EXECUTIVE SUMMARY

Leaders in the healthcare supply chain are rapidly coming to the same conclusion as those in a growing number of other industries. That is, inconsistent inaccurate business information within and between companies directly undermines critical business objectives (e.g., revenue, profit, time to market, customer satisfaction, etc.). Supply chain masters the likes of Wal-Mart, Walgreen, CVS, Rite Aid, Eckerd Drug, Kroger, Albertsons, Johnson and Johnson, Pfizer, Kimberly Clark, Wyeth Health, Procter and Gamble, and thousands of others are achieving new levels of business efficiency and effectiveness.

The secret to their success is rooted in something called global data synchronization. By establishing a foundation of accurate, consistent business information within their organizations and between themselves and others with which they conduct business, these companies are posting heretofore unheard of performance improvements. What is, perhaps, even more important, though, is the fact that this foundation of reliable business information is driving enormous upside potential for process streamlining and automation to further improve business performance.

What was only a promising vision as recently as 1999 has since become a proven reality with documented results, standardized methodologies, and literally thousands of companies actively practicing data synchronization worldwide. In fact, the number of participating companies went from a mere 25 in January of 2002 to 2,607 in January of 2004. By the beginning of 2005, that number had risen to include more than 4,000 U.S. suppliers and retailers.

In Canada, manufacturers and retailers in retail pharmacy, food/consumer packaged goods (CPG), and food service have been synchronizing their product information and images for several years. By the end of 2004, more than 30 retailers/distributors were engaged and more than 2,000 suppliers had been certified. More than 297,000 trade items had been published. And, more than 66,000 unique item images had been loaded. Now, data synchronization in Canada is expanding to include hardlines, home improvement, and housewares.

But, this is not just a North American phenomenon. As of this writing, 23 other countries—beyond the U.S. and Canada—have formal data synchronization initiatives in place. The industries/communities involved span a wide variety including—but certainly not limited to—retail mass merchandising, food/CPG, chain drug, direct store delivery, apparel, hardlines/home improvement, housewares, office products, electrical, and automotive aftermarket. In the face of this global adoption of data synchronization as a foundational element of effective business, many other industries—including healthcare—are launching pilots to perfect the process in preparation for rolling out the initiative to their entire community.

At long last, with this many industry sectors getting on board and successfully synchronizing their business information, it's no longer a question of whether it can be done, whether it will work, or whether it's worth the investment to do it. Instead, the open question is how long it will take for those industries that still haven't addressed their information integrity problems to begin to do so.

The great news for the healthcare industry is that visionary representatives from all facets of the industry's supply chain¹ have been working to fashion healthcare-specific standards to accommodate this industry's unique needs and challenges. The stage is finally set for medical, surgical, pharmaceutical, and all other healthcare supply chain

¹ Manufacturers, distributors, GPOs, providers, etc. have worked together to fashion specific approaches for the healthcare industry to practice global data synchronization.

operatives to benefit from the litany of advantages that come from conducting business on a foundation of “clean” information.

With numerous other industries—that are well past the point of wondering whether data sync might be beneficial—busy posting impressive results from global data synchronization, it’s high time for the healthcare industry to step up to the plate and begin to leverage this powerful tool to drive down costs, increase efficiency, and raise the quality of healthcare. With the leaders in the healthcare industry having made such significant progress in defining standardized approaches for synchronizing business information in the healthcare supply chain, there’s never been a better time to get involved to ensure that your company doesn’t fall woefully behind the rest of the industry in this pivotal initiative. And, with the technology of the Internet now making it possible for even the smallest organization to participate with little more than Internet access, the stars have finally aligned for the healthcare industry to achieve information integrity throughout its supply chain. “There is now an opportunity to show how using new technology to ensure accurate product data will result in lower costs to the consumer.”²

The industry has now reached the point where it’s critical for industry executives to enable their organizations to benefit from this significant progress by focusing the most appropriate personnel on achieving the following goals:

- Contribute to industry standards to ensure their organization’s best interests are accommodated in those standards.³
- Get in sync internally throughout the organization (Internal Synchronization).⁴
- Get in sync externally with partners (External Synchronization).⁵
- Stay in sync internally and with partners (Ongoing Synchronization).⁶

The need is clear. Bad data not only adds cost to all members of the healthcare supply chain and makes it impossible to reliably track clinical outcomes (thus undermining patient welfare), it unnecessarily taxes valuable limited medical resources who could otherwise be administering to their patients (again, undermining patient welfare). So, as citizens, each of us pays the price for bad data in the healthcare supply chain through increased healthcare costs, increased taxes, undermined patient safety, and distractions from patient care.

Fortunately, the standards for synchronizing critical business information are established and in use worldwide. The technology has evolved to allow every company to benefit. And, the documented savings shown by those who have already begun synchronizing their information are undeniable. “The numbers behind this are so compelling that it is frightening to think we would be reticent to move forward. If we do not...we are doing an injustice to our customers, our shareholders, ourselves, and our associates.”⁷ Now is the time to address the business and ethical imperative of reducing healthcare costs by establishing accurate, consistent business information across the entire healthcare community.

² Source: Paul Higday, VP Program Development, Owens & Minor

³ While healthcare guidelines have been created for the industry, each company should invest a resource to ensure that the current guidelines adequately accommodate its particular needs.

⁴ Establish consistent, accurate information throughout your organization.

⁵ Ensure that the business information values you deem to be “true” are consistent with those of your supply chain partners (be they suppliers, customers, GPO’s, etc.).

⁶ Establish proper internal and external processes to ensure that any new or changed information is properly updated throughout your own organization and your partners’ organizations quickly, accurately, and consistently.

⁷ Source: Bill Grize, president and CEO, Ahold U.S.A., Inc.; Grocery Manufacturers of America (GMA) Executive Conference presentation, June 10, 2002

In fact, the case is so clear that external pressure for the industry to address this problem has already begun and will continue to mount. Citizens, payors, etc. continue to wonder what the industry will do about rising healthcare costs and when they will become proactive about it. Dennis Byer, Senior Director of IT for Consorta, observes that, "Either the healthcare industry does this on its own or it will be mandated by the government because the issues of patient safety are too severe not to act."

The Federal government has, in fact, shown an appetite for addressing the lack of data synchronization in healthcare. In 2004, Congress authorized funds to begin work on solving the problem (i.e., work with the industry to fashion an industry-wide standard; identify and implement a solution for data sync; and build an internal solution for addressing data synchronization across targeted government organizations). The funded amounts and targeted organizations are as follows:

	2004	2005	2006	2007
OSD Health Affairs	\$3.5M	\$2.5M	Anticipated \$2.5/year ⁸	
DoD/VA Joint Incentive Funding	-	-	\$2.25M	\$2.25M

In addition to this, in June 2005, the DoD, VA, and FDA met to discuss the critical importance of standardized and synchronized data throughout the healthcare supply chain and acknowledged that industry-wide data synchronization was a necessary precursor to other industry initiatives such as implementing RFID (radio frequency identification) for devices to improve patient safety.

This realization begins to highlight a more provincial area of business concern related to data synchronization. Consider the fact that everything a company tries to do with information is directly dependent on the accuracy and consistency of that information within that company and across all companies with which that company does business.⁹ As such, any information-based healthcare industry initiative—be it RFID, the electronic health record, etc.—is dependent on accurate consistent product information throughout the entire healthcare community. Fail to establish a foundation of information integrity throughout the healthcare community and any information-based industry initiatives will fail, as well.

As if all of this weren't enough, there's a competitive aspect to data synchronization, as well. Trying to compete without synchronized data as your business foundation is like trying to run a marathon with only one shoe. You might be able to look good in the early going, but lack of preparation will become painfully evident well before the end of the race. In healthcare, the race for industry-wide synchronized information has begun. The only remaining question is where you'll choose to be: in the race, in the locker room suiting up, or in the stands watching it pass you by.

Data synchronization is a problem that is, indeed, solvable. The status quo is clearly unacceptable. And, the benefits to be had from synchronized data completely dwarf the effort required to achieve them. As Victor Hugo put it, "There's nothing so powerful as an idea whose time has come." All that is needed for this industry to effectively address data synchronization once and for all is at hand. It's time for the healthcare community to step forward and heal itself. After all, neither the problem nor the pressure to solve it will go away.

⁸ Final annual amount pending final resolution

⁹ Source: "The Corporate Book Of 'Duh'"

DATA SYNCHRONIZATION IN HEALTHCARE

Introduction

For years, citizens, employers, and government representatives have openly complained about the rising and unacceptably high costs of healthcare in the United States. The figures to substantiate concern over the matter have been so often cited that—through over use—they've practically lost their ability to shock. For instance, a recent study revealed that:¹⁰

- Health insurance premiums in the U.S. are skyrocketing and there is no relief in site for businesses or employees. Average annual premiums for family coverage were \$10,880 in 2005.
- With corporate healthcare continuing to rise, the percentage of small businesses offering health benefits to employees dropped to 59% in 2005 (down nine percentage points since 2002). The same statistic for large corporations dropped by one percentage point in 2005 to 98%.
- Census Bureau data show that the number of uninsured Americans stood at 45.8 million in 2004, an increase of 800,000 people over the number uninsured in 2003 (45.0 million)¹¹.

Meanwhile, another recent survey¹² showed that:

- 50% of large US companies surveyed said that increased healthcare costs have contributed to slower profit growth over the past 12 months.
- More than 75% said they may ask their employees to pay a greater share of health insurance costs.
- 25% said double-digit healthcare cost increases may force them to lower wage increases for employees.
- 20% expect to slow hiring of new permanent employees in the year ahead.
- Healthcare costs per employee had risen by an average of 12% over the past year, and the companies surveyed project another increase of 11.1% over the next 12 months without any changes to plans.

But, the negative impact is not just on private businesses. A recent report¹³ which cited a “crisis in municipal health costs” indicated:

- Cities and towns have seen a 63% increase in health insurance costs since fiscal year 2001. This is:
 - Nearly double the rate of increase in state healthcare costs
 - More than four times the growth rate of local budgets

Industry analysts quickly and frequently point to the high costs and lack of efficiency in the healthcare industry. “The {healthcare} system has \$11 billion worth of waste in the supply chain each year.”¹⁴ Analysts point out that the

¹⁰ Source: Chuck Marvin, “Small Businesses Struggle With Rising Healthcare Costs; September 15, 2005; summarizing a study that was recently released conjointly by the Kaiser Family Foundation and the Health Research and Educational Trust

¹¹ See <http://www.cbpp.org/8-30-05health.htm> for more information.

¹² Source: “Rising Healthcare Costs Cut Into Profits For Half Of Large U.S. Businesses”; July 18, 2005; reporting on PricewaterhouseCoopers' Management Barometer Spring 2005.

¹³ Source: Lisa Wangsness, Globe Staff, “Rising Healthcare Costs Stagger Cities”; July 20, 2005; reporting on a July 2005 report from the Massachusetts Taxpayers Foundation

¹⁴ Source: Darren Marhula, Analyst at U.S. Bancorp Piper Jaffray

industry has “largely resisted” attempts to “streamline notoriously bloated and inefficient medical procurement, billing, and record-keeping procedures”.¹⁵

But unlike other industries—such as retail mass merchandising, CPG/grocery, chain drug, hardlines/home improvement, office supply, automotive, etc.—that have been able to aggressively leverage technology to trim waste out of their supply chains, healthcare is suffering from a much more fundamental problem...wide-spread inaccurate, non-standardized, inconsistent business information—both within individual companies and across the entire healthcare supply chain.

Inconsistent inaccurate information creates confusion in the healthcare supply chain. And, as Dennis Byer, Senior Director of IT for Consorta, reminds us, “Confusion in healthcare adds cost.” So, whether or not the industry wants to use technology to streamline and automate its slow, manual, error-prone processes, it is effectively barred from doing so as long as the information in the supply chain is bad. As Dennis Black, Director eCommerce for BD (Becton, Dickinson and Company), puts it, “Bad data is preventing healthcare from taking advantage of technologies that increase supply chain efficiencies. There is a growing awareness that this needs to be fixed in order for healthcare to function as efficiently as other industries.”

As Mike Mahoney, CEO of Global Healthcare Exchange (GHX), points out, “Better data synchronization leading to lower supply chain costs for providers can have a significant impact on the national economy. Consider this: On average, supply chain costs represent between 25-30% of a hospital's total costs, and hospital spending accounts for approximately 1/3 of total healthcare spending in the U.S. With national healthcare expenditures currently accounting for more than 15% of the gross domestic product—and with that percentage expected to exceed 17% by 2010—controlling supply chain costs through data synchronization can have financial benefits for more than just the healthcare industry.”

The bad news is that healthcare cost figures keep rising each year as the problem continues to worsen. Worse yet, the industry has not yet chosen to collectively do something about it. The promising news is that there is a clear and straightforward path for addressing the problem. Data synchronization initiatives in other industries (e.g., CPG/grocery, retail mass merchandising, chain drug, hardlines/home improvement, office supply, etc.) have demonstrated real and significant decreases in supply chain management costs.

The data sync mechanisms and techniques utilized by these other industry sectors are easily transferable to healthcare. The path to consistent, accurate, timely data has been clearly marked. Unfortunately, in spite of extensive efforts to pull the industry together to begin making progress on this initiative, the majority of healthcare community members have not stepped up to the plate to begin working on an entirely addressable problem.

Fortunately, there's a decided shift toward taking action. Influential representatives from each of the four major sectors within healthcare (providers, GPOs, distributors, and manufacturers) have been actively working with associations, service providers, standards organizations, and each other to define a solution to the one problem that lies at the heart of any attempts to improve efficiency, costs, and effectiveness in the US healthcare supply chain, namely the lack of data accuracy and consistency throughout the industry and its members.

The Technical Advisory Group (TAG)—made up of a cross-section of the healthcare community—has established the technical specifications for how data synchronization can be implemented in healthcare. A thorough feasibility

¹⁵ Source: Hal Plotkin citing analyst comments; Silicon Valley Insider

study was created to validate the fact that this is, indeed, a solvable problem in this industry. And, a pilot was conducted to further prove the point.

But, in spite of all the promise and the compelling evidence, it will still require the participants in the healthcare supply chain to pull together and actually do something about this serious point of erosion that eats away at the top and bottom lines of all those who allow it to continue unchecked. In the long run, the problem will be solved eventually, one way or the other. Either the leaders within the industry will proactively move to solve the problem in a mutually beneficial manner or the significant progress made by other industries will make the lack of progress in healthcare seem unconscionable...and the industry will have to act.

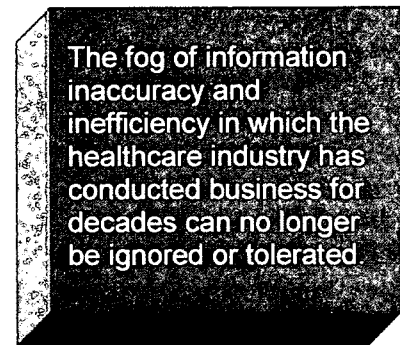
This paper focuses on a significant, widely acknowledged driver of cost and inefficiency in the healthcare supply chain, namely, the widespread lack of information integrity and synchronization within and between organizations. It highlights why the problem must be addressed. And, it shows how it can be proactively fixed once and for all. Solving the data synchronization problem is no longer uncharted territory. Other industries have initiated programs that have resulted in significant decreases in supply chain management costs. From these, a clear path with demonstrable results already exists. What remains to be seen is when the healthcare industry will finally choose to act on this problem.

It's Unacceptably Bad

For those just beginning to realize the significance of the sad state of affairs of information in healthcare, it's time to admit that the poor condition of such simple and yet, foundational information elements as vendor identification, product ID, unit of measure/packaging, and price can no longer be condoned.

A given hospital often has several IDs and prices in their purchasing systems for the same product. The contract information established between a manufacturer and a GPO is frequently not conveyed to the distributor and/or hospital in anything even vaguely approximating a timely fashion. This leaves the distributor and provider in the dark about contract specifics and, in turn, creates mistakes that must be investigated, reconciled, and resolved after the fact...thus inefficiently using precious limited human resources. As Frank Fernandez, Asst. Vice President/Corporate Director of Materials Management at Baptist Health South Florida, puts it, "There's no reason why it should take more than a day to load pricing.¹⁶ Today, the shortest time could be 30 days. It often takes as much as 60 days to get pricing and contract information. GPOs are trying to shorten this time, but it will require the cooperation of all participants in the supply chain to do so."

These delays result in a parade of preventable mistakes that require time and money to investigate, identify, and resolve. And, all of that results in higher healthcare costs to you and me, our employers, our government, and you and me again as taxpayers. Mr. Fernandez points out that, "The impact of upstream mistakes and inefficiencies is ultimately felt at the level of the healthcare care giver. This is forcing inefficiency and higher costs on the shoulders of the hospital and, ultimately, the payers and the patients."



Worse yet, in an age where technology is being used extensively in other industries to reduce errors, cut cycle time, remove costs from the process, etc. the exchange and maintenance of this and similar critical item data is slow, highly error-prone, and disappointingly disorganized in healthcare. In fact, the fog of information inaccuracy and inefficiency in which the healthcare industry has conducted business for decades can no longer be ignored or tolerated.

At a time when industries such as retail, automotive, high-tech, and others have long been demonstrating how supply chain participants can drive efficiency and growth based on a foundation of consistent accurate business information, the majority of the healthcare supply chain remains inexplicably stuck in the data synchronization equivalent of creeper gear. The result is that attempts to streamline supply chain costs by implementing new technologies are sabotaged by inaccurate item data. In turn, these efforts merely accelerate the generation of errors. It's what Craig Wigginton, Vice President, Chief Technical Strategist at Neoforma, calls "garbage at the speed of light".

At a time when organizations like Dell report that they: (a) are integrated with over 85% of their suppliers, (b) issue a bill of lading every twenty seconds (and receive materials within two hours), and (c) have decreased inventory shelf life from thirteen to seven *hours*, healthcare plods along awash in a sea of inaccurate information with avoidable costs that are passed down to you and me, our employers, and our government.

¹⁶ In fact, Wal-Mart reported a reduction in item maintenance time from 15-30 days down to 1 day courtesy of data synchronization.

Now, it should be noted that painting anything with a broad brush runs the admitted risk of not giving credit to those sectors that have made progress in the midst of near consistent failure elsewhere in the community. The pharmaceutical sector, for instance, has managed to make admirable strides toward standardizing participant identification¹⁷ and product identification.¹⁸ But, even as commendable as these steps are, that sector—like the rest of healthcare—still has yet to address a myriad of other issues related to information synchronization.

For instance, even with a standardized item numbering system and with electronic data interchange (EDI) standards defined for the timely accurate consistent exchange of GPO contract data amongst all participating parties in the pharmaceutical community—like medical/surgical—the industry still has yet to choose to synchronize contract data in a timely way to wrestle chargeback/rebate issues to the ground.¹⁹

But, the problem isn't just with activities surrounding changes to existing items or dealing with obsolete items. New item information is still exchanged in inefficient, highly error-prone, manual, proprietary methods that (1) take weeks to update the systems of those parties involved and (2) unnecessarily delay the introduction of those new products into the supply chain. [Meanwhile, organizations—like Wal-Mart—report having pared item maintenance times down from fifteen days to just one day courtesy of their data synchronization initiatives with their suppliers.²⁰]

So, even in a sub-vertical of healthcare, like pharmaceutical, that has made admirable strides in areas that the rest of healthcare still needs to address, there are still numerous examples of preventable problems needing to be corrected...problems whose costs are ultimately passed down to you and me, our employers, and our government.

Specifically, How Bad Is It?

As intuitively obvious as the negative impact of the lack of information integrity is in healthcare, humans have a proclivity to want to quantify things.²¹ Unfortunately, compared to other industries that have invested extensive amounts of time and money to perform detailed analyses of the problem and estimate the dollar value of solving the problem, healthcare has amassed comparatively few statistics. Fortunately, there are more than enough similarities between the healthcare supply chain and others (such as retail) that have been thoroughly studied to be confident of the results that healthcare can expect from data synchronization.

When asked whether the problems surrounding data integrity in healthcare are more or less severe than those extensively documented in the retail supply chain, Joe Pleasant, CIO at Premier, said, "The information problems in healthcare are more severe than in retail because of the added complexity of the products and the supply chain. And, the multiple purchasing agents at the provider level (e.g., dietary, laboratory, surgical, etc.) make it even more complex."

In fact, nearly everyone interviewed from the industry agreed that it is reasonable to expect that—because of these similarities and the added complexities of healthcare—the benefits to be realized by the healthcare sector would be

¹⁷ Through their use of DEA numbering

¹⁸ Using NDCs, product bar coding, and now, pilots with RFID (radio frequency identification)

¹⁹ Note: Standards have been in place since 1985 to facilitate the electronic exchange of GPO contract information.

²⁰ Source: Cincinnati Business Courier – "Data Sync Might Be In Your Future"; Michelle Seibert

²¹ In fact, several of those interviewed from the industry emphasized that the issue of bad data and the need to address it is a no brainer. Comments often cited the amount of waste in the industry being so significant and obvious that further study of the problem would, in fact, be a waste of resources that could otherwise be applied to solving it.

comparable to—if not greater than—those accrued in other industries that have already moved forward with data synchronization initiatives. Frank Fernandez, Asst. Vice President/Corporate Director of Materials Management at Baptist Health South Florida, emphasized that the benefits healthcare could expect to realize from data synchronization would be “at least as good, if not better {than those being reported by retail}. Once the problem is resolved (i.e., standardize how data synchronization will be done in healthcare) we will have many more efficiencies and lower supply chain costs in this industry.”

This information combined with what we do know about the data synchronization state of the union for healthcare gives us a clear picture of just how sick the patient really is. In fact, in a series of interviews with providers, GPOs, distributors, manufacturers, and industry associations conducted in preparation for this primer, every respondent indicated that they felt the information quality and synchronization problems in most of the healthcare supply chain were at least as bad as—and likely much worse than—in the retail sector. Fortunately, we have numerous examples of just how bad the state of data was in the retail sector before they began addressing it with data synchronization.

As a benchmark, then, we look at the U.S. consumer products community which has invested heavily to determine the negative impact of bad data and the benefits that could be anticipated by companies addressing that bad data. Results from one of those studies show that according to an A.T. Kearney investigation in the retail consumer products supply chain:

- \$40 billion or 3.5% of sales are lost each year due to supply chain information inefficiencies.
- 30% of item data in catalogs used by retailers and manufacturers for replenishment of stock is in error. And, each of those errors costs \$60-\$80 to address.
- Companies invest an average of 25 minutes per SKU (stock keeping unit) per year manually cleansing out-of-sync item information.
- 60% of all invoices generated have errors. And, each invoice error costs \$40-\$400 to reconcile.
- 43% of all invoices result in deductions.
- It takes an average of 4 weeks to roll out a new product—in large part due to the inefficient and error-prone approaches for the exchange and updating of new item information in buyer and seller systems.

The source of the business problems described by these dismal statistics is the erroneous information contained in the systems of the buy- and sell-side companies trying to conduct commerce through their distribution channels. Bad item numbers, incorrect prices, inaccurate units of purchase/use, etc. are costing individual companies literally millions of dollars a year, are unnecessarily driving up the cost of healthcare in the U.S., and will continue to do so until they're addressed.

So what is bad data costing companies in the retail supply chain? Based on findings in a recent study from CGE&Y, the answer is plenty! The study revealed that the impact of out-of-sync information within and between businesses in the retail supply chain is costing the industry an average of 1-3% of supply chain performance. Mike Haas, Vice President of Information Management, Johnson & Johnson Consumer/Personal Care & Consumer Pharmaceuticals Group noted in a Logistics 2001 article titled “Planning for the New Global Compliance Standards”, that “item synchronization issues cost manufacturers ½% of sales annually.”

For decades, corporations have used technology to remove the manual element from information processing to squeeze delays, errors, and resource inefficiencies out of the supply chain. But, amidst best efforts on this front,

organizations are realizing that they are still plagued by information exceptions that force manual intervention and erode the ROI they might have otherwise realized—had it not been for the information discrepancies. For example:

- A major wholesaler estimates that 37% of its roughly 2.5 million invoices a year error out with either bad prices or bad item numbers.²² [Meanwhile, one of their major competitors estimates a discrepancy rate of only *two-tenths of one percent*. Consider the competitive mismatch!]
- A large retail chain indicates that it has item information strewn across more than a dozen internal databases—none of which are in sync with one another...let alone with suppliers. To make matters worse, 30% of their inbound shipments contain items whose numbers don't match item numbers on file. This (1) forces manual research and correction and (2) slows the receiving process—which normally takes only 24 hours, but extends to eight days when such exceptions are found. Such mistakes drive up Days Inventory, drive down Inventory Turns, and risk out-of-stocks. Of course, such inventory deficiencies have much more dire consequences when the end consumer is a patient in need of the product to address a health issue.²³
- One consumer products manufacturer—which has long used electronic data interchange (EDI)²⁴ to receive orders electronically and process them through an integrated automated interface—admitted that 20% of their EDI orders kicked out with either bad item numbers or prices. The supplier noted that after having invested the time, effort, and dollars to implement EDI with their most important customers, their out-of-sync item information has relegated them to manual exception handling for 1 in 5 of their otherwise integrated orders. What's worse is that not only did the processing costs for those erroneous orders increase substantially²⁵ as a result of downshifting to manual mode, the cycle time to process the order was extended²⁶, as well, causing excess inventory carrying costs—or, worse, stock outs²⁷—on their customer's side.
- One \$500 million retail chain averages 100,000 manual purchase orders each year. They are able to match only 53% of those to the supplier invoices they receive.
- A 400-store retail chain found that 72% of the invoices from their suppliers kicked out with pricing exceptions with a 1% allowance for discrepancies. Even when they raised the discrepancy buffer to 5%, 68% of their invoices still couldn't make the cut.

²² A study by the National Wholesale Druggists Association (now, the Healthcare Distribution Management Association (HDMA)) estimates the average cost to research and correct a *single* reconciliation exception ranges from \$15 to \$50 per error (a cost that is shared between the buyer and the seller). Taking just half of the lower number and applying it to 37% of the 2.5 million invoices yields an annual cost of rework equal to nearly \$7M. This, of course, assumes that the erroneous invoices had no more than one error each.

²³ Case in point: At a local emergency room, my 3 ½ year old grandson was just denied the customary shot of antibiotics—that is normally administered to treat children on the verge of blood poisoning before starting them on oral antibiotics—because the emergency facility was out of serum. He recovered, but more slowly than he would have had the emergency facility been better at supply chain management.

²⁴ See Appendix for a definition of EDI.

²⁵ A McKinsey and Company study of 1,200 companies showed that on average a manually processed order was nearly seven times more expensive to process than an integrated order.

²⁶ A McKinsey and Company study of 1,200 companies showed that integrated automated processes averaged five days shorter cycle time (2 versus 7 days)—from order to product receipt—than the same processing steps performed manually.

²⁷ A 1/16/96 Accenture study on out-of-stock merchandise in the grocery sector showed that "Out-of-stocks cost retailers more than 15% of potential sales of advertised items." "The net impact of consumer responses to out-of-stocks is to reduce consumer purchases 3.1% per shopping trip." "Sales lost on out-of-stock merchandise account for 6.5% of category sales volume." "A retailer's primary customers shop at competitors' stores 25% of the time."

In describing how a senior executive might react to such situations as these, Bob Evans, editor-in-chief at InformationWeek, wrote in his June 2002 article, “Business Technology: The \$40 Billion Question”, “Wouldn't that trigger a vein-throbbing, spittle-spewing, fire-breathing tirade from the CEO, who'd seem to have good reason to threaten to fire every person in the company—starting with himself—unless fixing the problem became the top priority of the entire organization?”

But, how bad is the problem in your particular company? Well, it depends on a number of factors. One quick way to assess the size of just the *tip* of the iceberg in your organization is to ask your heads of order processing and/or accounts payable what percentage of your orders and/or invoices kick out with just bad pricing or item number discrepancies.²⁸

The answers you get from your inquiry (i.e., percent of erroneous documents) multiplied times the number of physical orders or invoices you process a year will provide an immediate sense of the magnitude of the problem in your company and between you and your customers and/or suppliers. Now, expand your scope to include the litany of other information types used within your company and between you and your partners in commerce. Finally, consider how you obtain product information from your suppliers or how you provide such information to those who request it. Chances are that it's manual, slow, inconsistent, and flawed. Now, ponder the volume of pricing- or partner identification-based exceptions that you wrestle with in your chargeback/rebate reconciliation efforts. Indications consistently confirm that bad data is rampant throughout those processes.

When you consider these aspects of your product information management, exchange, and use, you begin to have a basic idea just how bad it really is. The reality is that in most organizations, it's shockingly bad! In fact, the sheer number of organizations—compared to other industries—dedicated to analyzing and cleaning up the data in the healthcare industry is a testament to the current sad state of affairs across the industry.

The Infection in Healthcare

As compelling as the reports from the consumer products channel are, there will invariably be those who will claim that the healthcare supply chain is sufficiently unique to render the consumer products statistics meaningless to the healthcare community. While this is most certainly an inaccurate sweeping generality, there is some merit to the added confidence that statistics from one's own industry engender. With that in mind, consider the following pieces of evidence about the state of information disarray in the healthcare industry.

A data synchronization pilot conducted by the Department of Defense²⁹ was designed to get a sense of the state of critical product information within and between healthcare supply chain sectors. The pilot included industry participants from manufacturing, distribution, GPOs, and providers.

At a high level, the pilot identified the alarming state of inconsistent and missing information within and between companies in the healthcare supply chain. In a community with frequent product changes, products becoming obsolete, and new products being introduced on a continuing basis, the pilot revealed a spider web of information disarray across all levels in the industry.

²⁸ We've included a brief questionnaire in the Appendix to assist you with estimating the minimum savings your organization could expect to realize as a result of implementing even the most elementary form of synchronization (i.e., item number, partner IDs, and price).

²⁹ Conducted between January 2003 and May 2004

“There is an accelerating flow of new products into the healthcare industry. There needs to be a way to get these products quickly into the hands of the consumers by eliminating the delays of manual transfer of new product data which results in delays and errors in product delivery throughout the industry.”³⁰

In particular, three categories of “data disconnect” were identified between participants: part number disconnects, packaging disconnects, and description disconnects. Findings showed the following:

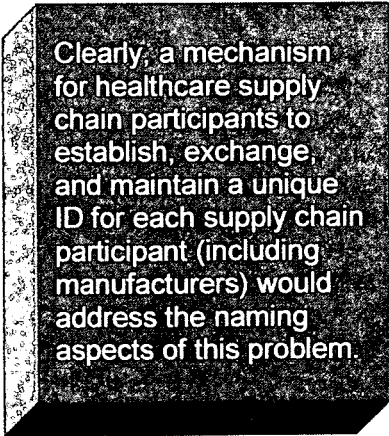
Manufacturer And Part Number Disconnects: When comparing manufacturing data with that which was held by the participating GPOs, distributors, and providers, striking inconsistencies were found.

- 7% of the part numbers in the pilot were found in the GPO’s data but not the manufacturer’s data.
- 5% of the part numbers in the pilot were found in the distributor’s data but not in the manufacturer’s data.
- The pilot showed that providers have the greatest problems with manufacturer name matching. In fact, manufacturer naming problems were found 30% of the time at the provider level.

The pilot indicated that there were four key causes for manufacturer names/part number mismatches:

- (1) Obsolete products in the GPO’s, distributor’s, and providers systems
- (2) Lack of a common manufacturer name or manufacturer name code across the industry. Everybody creates their own name for the same manufacturer
- (3) Inability to identify the manufacturer of a product in GPO, distributor, and provider’s systems when the supplier of the product is different than a manufacturer. Normally, GPOs, distributors, and providers only have a supplier name field in their systems
- (4) Distributors and hospitals assign their own part numbers to products

Not surprisingly, such lack of consistent identification for a supplier creates trouble when trying to map the common name of a supplier to the correct part number for a product. Clearly, a mechanism for healthcare supply chain participants to establish, exchange, and maintain a unique ID for each supply chain participant (including manufacturers) would address the naming aspects of this problem.³¹



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The inability to reliably reference participants in the healthcare supply chain has other implications. Craig Wigginton, Vice President, Chief Technical Strategist at Neoforma points out that, “There is a critical need to implement an industry-wide trading partner identification standard in the supply chain. Without a consistent numbering standard, such as the HIN or GLN, we will continue to see ordering errors within hospitals and added expenses for suppliers in contract administration, invoice reconciliation, and rebate processing. Unfortunately, these costs are not adding any value for suppliers and the millions spent performing contract administration is not visible to their hospital customers.”

³⁰ Source: Christine Vincent, Global Healthcare eBusiness Director, AGFA

³¹ Note: Other industries that have solved this problem have established a globally unique global location number (GLN) to refer to a specific organization’s logical, legal, or physical parts.

Indeed, many agree that the industry regularly relies on the resourcefulness of the primary healthcare provider to prevent supply chain issues like product stock-outs from becoming issues that could negatively impact the quality of care given. Michael Stanley, Director SCIS Content & Business Process for Trinity Health, explains, "Incorrect shipments are a problem because of bad item numbers. Hospitals have to carry additional inventory (especially through hoarding...e.g., items placed in cubby holes) or having to pay extra for expedited acquisition and delivery of needed products. These are just some of the many problems around inventory control that originate from inaccurate item identification." Sadly, these "resourceful" recovery measures create excess inventory or trigger higher-cost exception buying practices to ensure supply availability and, thereby drive up the overall cost of healthcare costs.

But, the problem with part number disconnects is not solely attributable to the lack of a consistent supplier identification mechanism. The lack of standardized part numbers and the lack of synchronization of the part numbers themselves is an enormous culprit, as well. The pilot showed that every one of the five distributors studied had a different part number for a particular product. To make matters worse, many of the hospitals involved had a different Product ID for this same product. This clearly points to a troubling waste in human capital throughout the healthcare supply chain that is spent making up for—or cleaning up from—the lack of standardized item numbering in this industry...again, an entirely fixable problem!

In one hospital that was studied, a particular product was listed in the hospital's systems with eight different Product IDs...each of which had a different price (only one of which was the correct contract price). An audit of the hospital's purchasing showed that they had paid as much as 30% above contract price simply because they used the wrong Product ID to order the product.

As Joe Pleasant, the CIO at Premier, points out, "Hospitals are spending a lot of money having to repackage and re-bar code their products because they can't rely on the relationship of their own databases to the product's id." Of course, all of this further exacerbates the rise in healthcare industry costs which ultimately results in higher healthcare costs for all of us.

The CPG/grocery industry standardized on the UPC as its common means of uniquely referencing products and tying them back to a specific manufacturer. The *annual* savings realized by that industry as a result of standardizing their product ids is \$30 billion—more than 50 times greater than the originally projected annual savings promised in the 1975 business case.³²

Packaging Disconnects:

- 20% of the items checked during the pilot suffered from missing middle level packaging.³³ This is clearly a problem since "Most hospitals buy at the box or pack level. They cannot use the GPO price in their MMIS without knowing how many boxes or packs are in a case."³⁴ Surprisingly, manufacturers in the pilot could not provide middle levels of packaging on 20% of their items.³⁵

³² Source: PriceWaterhouseCoopers 1999 Study: "17 Billion Reasons To Say Thanks: The 25th Anniversary Of The U.P.C. And Its Impact On The Grocery Industry"

³³ For example, the GPO's file showed a case of 150 eaches while the manufacturer's file showed a case containing three packs of fifty each.

³⁴ Source: DoD Pilot Results presentation; John H. Clarke, February 3, 2005

³⁵ Source: DoD Pilot Results presentation; John H. Clarke, February 3, 2005

- An additional 2% of the items had incorrect packaging information (e.g., incorrect number of eaches in a box or case) in the GPO file compared to the manufacturer's data. Of the packaging data provided to the DoD by manufacturers, 18% is wrong or incomplete.³⁶

Several of those interviewed indicated that far too many manufacturers have real problems providing complete packaging data. In such cases, they chose to abdicate that responsibility to distributors to figure it out on their own.

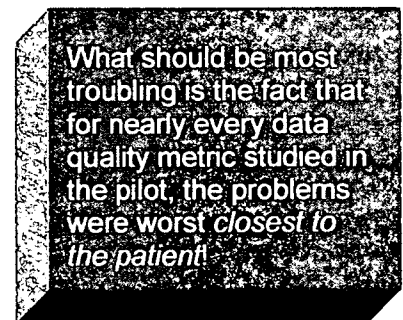
Description Disconnects: It was common for most of the product descriptions used throughout the supply chain for a particular product to differ from company to company. For most items, the pilot discovered different item descriptions for the same product for each of the pilot participants. Very rarely did two participants have the same description for a product. Normally, everybody in the supply chain creates their own item description for an item—manufacturers publish multiple item descriptions on items and distributors and providers normally create their own. Automated systems that are used to support the supply chain have varying description lengths (ranging from 20 to 500 characters) that require manual truncation of otherwise good item descriptions.

For the products inspected in the pilot, the following lists the percentage of items with incomplete item descriptions at the various community levels:

- Manufacturers: 5-15%
- Distributors: 3-12%
- GPOs: 5-15%
- Providers: 10-20%

But, it gets worse. To further compound the problem, every supply chain sector in the pilot had missing product brand names. For the products inspected in the pilot, the following lists the percentage of items missing product brand names at various supply chain partner levels:

- Manufacturers: 2-5%
- Distributors: 5-10%
- GPOs: 5-10%
- Providers: 20-25%



Not surprisingly, the problem worsens the farther down the supply chain you go. [After all, garbage dumped upstream invariably creates greater pollution downstream.] But, what should be most troubling is the fact that for nearly every data quality metric studied in the pilot, the problems were worst *closest to the patient!*³⁷

Of course, such mismatches have the very real potential to mislead the purchaser into buying the wrong item, thus risking stock-outs, creating inefficiency in the supply chain, and, therefore, driving up operational costs for those involved.

When you glue these foundational elements of information (part number, supplier ID, packaging, and description) together and consider the litany of problems that emanate from inaccuracies in one or more of these elements, you

³⁶ Source: AHRMM presentation by Kathleen Garvin, DoD, "Department of Defense A Case for Data Synchronization and Product Data Utility (PDU)"; July, 2005

³⁷ NOTE: See Appendix for a table summarizing the findings from the pilot.

can begin to appreciate what the lack of data synchronization is doing to manufacturers, distributors, GPOs, and providers in the healthcare supply chain.

The following real life examples demonstrate the pain caused by bad data and the benefits hospitals achieved after synchronizing their data with suppliers:³⁸

- One 700-bed hospital with two distributors experienced purchasing errors caused by lack of data synchronization that contributed to higher freight costs that equal more than \$400K annually.
- One hospital—that reportedly has multiple people updating its item master (containing 15,000 products) using a variety of sources for data, e.g. vendor catalogs, sales reps, etc.—reported a 90% error rate due to inaccurate data in the purchase order/purchase order acknowledgement reconciliation process.
- Hospitals that underwent a data synchronization process averaged the following results:
 - 50% reduction in discrepancies between purchase orders and purchase order acknowledgements
 - 33 to 50% reduction in invoice discrepancies
 - 25 to 50% less time spent by buyers and Accounts Payable staff on researching invoice discrepancies
- Prior to cleansing their data, one out of every 5 orders from a key Integrated Delivery Network (IDN) had an error. Now only 1 out of every 25 has an error. The IDN also cleansed and reduced the size of its product item master from 75,000 to 45,000 items—in part by eliminating obsolete and duplicate items. Today, they say they have virtually no price discrepancies or unit of measure errors with vendors it transacts business with via the exchange.
- A mid-west provider cleansed and consolidated eight item masters into one. They now report cleaner data with orders placed through the exchange accounting for less than four percent of their invoice exceptions—this is compared to 75 percent that are attributed to fax orders and the balance to orders by phone. The reduced work and fewer exceptions qualify the provider for early payment discounts which total \$50,000 a year with their prime vendor alone.

Consider the experience of the DoD as it went about trying to outfit the hospital ship, USS Comfort, as it prepared to depart in support of Operation Iraqi Freedom. The Medical Directorate, Defense Supply Center Philadelphia (DSCP), was tasked with outfitting the ship with all pharmaceutical, medical/surgical, and capital equipment items required for war within 7 calendar (3 ½ business) days. This timeline presented a formidable challenge, even for DSCP.

DSCP's Pharmaceutical Business Unit was able to quickly identify and match the Pharmaceutical items requested with sources of supply for purchase by using the National Drug Code (NDC). The pharmaceutical industry must use this federally mandated standard number which identifies every drug and the different packaging quantities with a unique number. Unfortunately, this same "standard" does not apply to the Medical/Surgical product line. As a result, the Medical/Surgical Business Unit struggled simply to determine what exactly was required for the ship—a task that involved extensive manual research and continuous discussion and feedback from Navy customers.

Of the 995 Medical/Surgical items ordered, 224 had unidentifiable product identifiers and 205 had obsolete product identifiers. Because of a lack of a universal product number, the DoD was unable to electronically cross-reference

³⁸ Source: Global Healthcare Exchange (GHX) from experiences with their customers

for equivalents. It took 15 people two days to manually resolve the issues and order the needed items. A UPN would have enabled electronic processing in seconds.

Is Anyone Doing It, Yet?

As depressing as all this bad news is, the good news is that for years, many of the world's industries have been working to define a process and set of standards by which they could cleanse and synchronize the business information that they collectively used to conduct business. For the last several years, these industries have been implementing and executing data synchronization in full production. This is significant for healthcare because as Garren Hagemeyer, Executive Director, Health Care EBusiness Collaborative, points out, "We can leverage the experiences of other industries to avoid mistakes and get to a solution quicker than if we were the pioneers in synchronizing product information."

This initiative is known as global data synchronization (GDS). It includes standards for the information that trading companies maintain about the items they buy or sell, an orchestrated process to ensure that all concerned receive the information they need, and the partner information they use to conduct commerce with one another (e.g., correct contact information; purchasing, shipping, and receiving locations; bill-to/pay-to data; eligible contract participants; etc.).

The benefits of this effort are well documented and substantial. [Note: See the next section for documented results reported by companies that are already synchronizing their business information.] As a result, participation in data synchronization is growing worldwide at a near exponential rate.

The number of companies launching data synchronization initiatives in the U.S. alone rose from 25 in January of 2002 to 2,607 in January of 2004. By the beginning of 2005, that number had risen to include more than 4,000 U.S. suppliers and retailers. In Canada, manufacturers and retailers in retail pharmacy, food/CPG, and food service have been synchronizing their product information and images for several years. By the end of 2004, more than 30 retailers/distributors were engaged and more than 2,000 suppliers had been certified. More than 297,000 trade items had been published. And, more than 66,000 unique item images had been loaded. Most recently, data synchronization in Canada is expanding to include hardlines, home improvement, and housewares.

As of this writing, 23 other countries—beyond the U.S. and Canada—have formal data synchronization initiatives in place. Industries involved span a wide variety including—but certainly not limited to—retail mass merchandising, food/CPG, direct store delivery, chain drug, apparel, hardlines/home improvement, housewares, office products, electrical, and automotive aftermarket. Many other industries—including healthcare—are launching pilots to perfect the process before rolling the initiative out to the entire community.

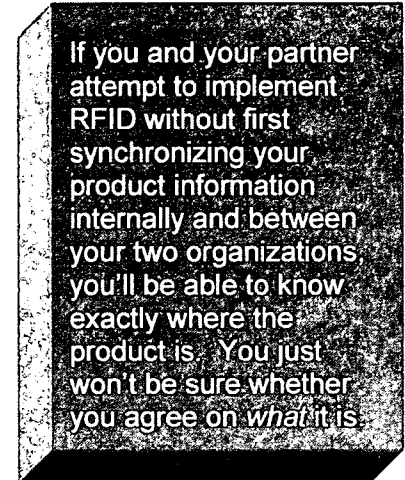
With the rapidly growing interest in RFID (radio frequency identification), there will be many more industries jumping on the data synchronization bandwagon—since a foundation of clean, consistent data is essential to RFID success. As Forrester put it, "Companies that view RFID projects as the panacea for their lack of visibility will be disappointed with the outcome of their investments. Before any RFID deployment, companies must invest in data synchronization."³⁹ Or, as was reported by Information Week in an article on Wal-Mart's RFID initiative, "Critical to the RFID effort is global data synchronization to enable communications with the industry."⁴⁰

³⁹ Source: Forrester Research report, "RFID: Icing On A Half-Baked Cake," Noha Tahomy

⁴⁰ Source: "Wal-Mart's Way", Information Week, September 27, 2004

A survey of the direct store delivery community conducted in early 2005 revealed that 89% of the respondents placed data synchronization as the undisputed necessary first step before attempting RFID.⁴¹ And, in a survey conducted by ATK/KSA, nearly 70% of manufacturers and 66% of retailers surveyed indicated that data synchronization should precede RFID.

Whether the healthcare industry pursues EPC, UID, UPN, RSS, etc. within an RFID initiative, it must first establish accurate consistent data throughout the supply chain or the RFID projects will fail. After all, if you and your partner attempt to implement RFID without first synchronizing your product information internally and between your two organizations, you'll be able to know exactly where the product is. You just won't be sure whether you agree on *what* it is. As Joe Pleasant of Premier put it, "Discussing RFID before addressing data synchronization is putting the cart before the horse—particularly since the industry still doesn't have standardized units of measure or a common means of identifying products."



Given the worldwide shift toward establishing a foundation of accurate, consistent business information within and between interacting companies, it's clear that neither the need/inclination nor the ability to do something about this problem is an apparition. Organizations the world over have come to recognize that any internal automation or external collaboration initiatives they might launch are directly dependent on the quality of the information used as input. As the old 50's adage reminds us, "garbage in equals garbage out".

Fortunately, several key healthcare providers, GPOs, distributors, and manufacturers have begun to take action. These industry leaders clearly understand the undeniable need to remove the shackles that industry-wide data disarray imposes on their daily business performance. For example, the DoD has launched a data synchronization pilot with a number of companies in its supply chain to address the current data dilemma in healthcare. As COL Don Buchwald puts it, "To be an effective supply chain manager for the DoD, we need to be able to communicate quickly and accurately with all our trading partners. Our Data Synchronization efforts are important not only for DoD, but for the entire healthcare industry."⁴²

Debra Thompson, Deputy Chief Materiel Branch, Brooke Army Medical Center, Fort Sam Houston, Texas, participated in the DoD pilot. She was pleased with the results, and said, "Synchronizing our logistics system data with the supply chain has allowed us to monitor contract compliance by ensuring that we were getting the best price for the products we order and purchasing from e-commerce sources of supply whenever practical. In addition to pinpointing business process variations between sites, data sync also identified where we were buying the same product under multiple order numbers, item names, as well as multiple manufacturers or distributors. As we continue to synchronize our data, it will prove helpful down the road as we prepare for industry-wide data standardization. Our data is currently in very good shape, and is much easier to group by manufacturer for standardization actions. This entire effort puts us in a great position to enjoy all the benefits of seamless supply chain management as well as communication to achieve optimal savings."⁴³

⁴¹ Source: GCI-DSD Process Group Survey, January, 2005

⁴² Source: DMLSS news"flash"; "The Case For Data Synchronization"; March 2004

⁴³ Source: Kathleen Garvin, DoD; "The Time is Right To Reap the Benefits of Data Synchronization"