

Bob Perry, 2006 President of the Association for Healthcare Resource & Materials Management of the American Hospital Association (AHRMM), notes, “Ten years ago, the healthcare industry wasn’t ready for data synchronization, but with so much technology, so much knowledge of the value of data synchronization and e-commerce, so much use in other industries, the momentum and all factors point toward using this. The buyers of healthcare products need to encourage their manufacturers to join the effort to synchronize all the product information with an industry ‘gold standard.’”⁴⁴

WIIFM

Of course, no business blindly climbs aboard a bandwagon solely because of the list of others who have chosen to do so before them. It’s only natural that participants in any supply chain—healthcare included—would want to assess the anticipated benefits for their particular company before supporting a particular initiative.

The challenge, of course, comes in the form of the proverbial chicken and the egg dilemma. In communities that are just getting started with an initiative, there are precious few industry-specific examples available to help a company calculate “what’s in it for me”. This dearth of quantified industry-specific ROI data invariably fans the flames of the inevitable naysayers who are all too quick to declare a problem unsolvable before the first cure can be administered.

This lack of a slam-dunk argument specific to a given industry is also quite convenient for those foot-draggers who—for a variety of provincial reasons—don’t really want the initiative to take flight at all. They are usually among the first to point out the absence of a detailed cost/benefit analysis for their particular industry. They are also usually the ones to most quickly point out that the ever-so-compelling success statistics reported by other industries have little applicability to their own industry because of its many unique aspects.

Matters are made worse if such resistant elements hold ill-founded misconceptions about a negative impact that the initiative in question might have. For instance, those first learning about data synchronization often cite concerns over losing competitive advantage as a result of the initiative. But, as Joe Pleasant of Premier points out, “The fears that data synchronization would cause a loss of competitive edge for those that implement it have simply not materialized in industries that are well down the path of doing it.” Dennis Byer, Senior Director of IT for Consorta, notes that, “Manufacturers and distributors are learning that data synchronization isn’t something to be feared. Other industries have proven this.”

Though the closet opponents of a new initiative are usually able to delay industry-wide adoption without having to openly oppose it, eventually, enough representatives in the community take the evidence at hand to be sufficient to warrant action and start without their reticent colleagues. Once sufficient critical mass is achieved, such reluctant holdouts readily climb aboard quickly in order to avoid falling too far behind the rest of the industry.

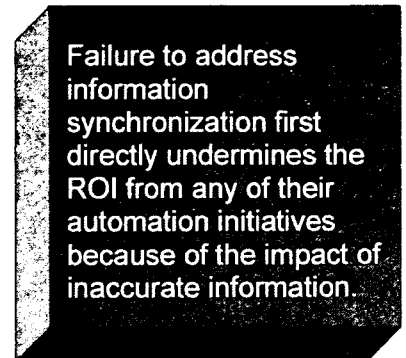
It must be noted that it is unfair to presume that every company that is not doing something about global data synchronization in healthcare is secretly trying to undermine progress in that area. On the contrary, it’s wholly understandable that companies faced with multiple priorities must juggle and prioritize those initiatives according to the benefit that they can deliver. As such, it’s reasonable to want to know what one could expect to net from an investment in global data synchronization. In doing so, however, it’s important to recognize that while the penalties

⁴⁴ Source: Kathleen Garvin, DoD; “The Time is Right To Reap the Benefits of Data Synchronization”

of not addressing data synchronization are relatively self-evident, the benefits that companies implementing global data synchronization are realizing are frequently seriously underestimated.

To begin with, the benefits from data synchronization are not limited to the immediate, significant, and intuitively obvious positives that come from reducing order and invoice content exceptions. Instead, they go on to generate improvements in *any* part of your organization that is dependent on accurate item and trading partner information to perform their business function effectively.

But, the benefits don't stop there, either. Many of today's companies are launching substantial process reengineering efforts to further drive redundancy, inefficiency, and cost out of their distribution channels. What they've found is that failure to address information synchronization first directly undermines the ROI from any of their automation initiatives because of the impact of inaccurate information.



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While this realization may seem to many like a quote from “The Corporate Book of ‘Duh’”, growing numbers of healthcare leaders are beginning to turn their attention toward cleaning up their internal information discrepancies first so that they can get on with further revolutionizing their processes. Millions of dollars are spent each year in an attempt to clean up and synchronize internal data stores. Unfortunately, without a process in place to *keep* information synchronized between these companies and their supply chain brethren, the information quality begins decaying the moment a change is made in one system without it being updated in all other systems.

Programs such as vendor managed inventory (VMI), automated product receipt and check-in, evaluated receipt settlement (ERS), electronic funds transfer (EFT), collaborative planning, forecast, and replenishment (CPFR), radio frequency identification (RFID), electronic product code (EPC), and other initiatives that are successfully driving time, cost, and inefficiency out of chains all have their “roots” in an inextricable dependency on accurate information.⁴⁵ The remarkable potential that each of these—and similar—initiatives have to catapult an organization to previously unheard of levels of performance efficiency and effectiveness is completely reliant on whether each participant is in sync internally and with their partners in commerce.

As PricewaterhouseCoopers put it in their paper “Scan-Based Trading—Moving Toward a Demand Driven Supply Chain”, from February 2001, “Going forward, the problem of data synchronization will have to be dealt with, not only for SBT (scan-based trading) to be successful, but also for VMI (vendor managed inventory), CPFR (collaborative planning, forecasting, and replenishment), and other collaborative supply chain initiatives to reach their potential.”

But, let's back up from what some like to think of as being “pie-in-the-sky” pictures of how business can be conducted in a modern supply chain—in spite of the fact that there are documented examples of leading buy- and sell-side companies successfully benefiting from *each* of these more advanced process approaches once they clean up their data. What can an organization expect to realize from *just addressing data synchronization*?

In fact, let's narrow the scope even more to show just how remarkable the ROI from a synchronization effort aimed at item information only can actually be. [NOTE: Because of paper-thin profit margins, intense competition, and the complexity of daily business interaction, many of the early adopters of global data synchronization were in the grocery arena—hence the higher concentration of success statistics from that sector. Not surprisingly, innovators like Wal-Mart have also been quick to leverage this powerful tool.]

⁴⁵ See Appendix for a brief explanation of each of these strategic initiatives.

Quotes from companies having implemented item synchronization underscore the kinds of impact such an initiative can have:

- “We have already added \$1M to our bottom line as a result of the work done. That figure could grow to \$30M, or 1% of sales, once everyone is on.” leading U.S. retailer
- “Cleaning up and standardizing *internal* data has generated benefits, even without {external} synchronization.” leading Canadian manufacturer
- “Synchronized data between us and our customer results in drastic reduction in rework due to errors.” leading U.S. manufacturer
- “Electronic collaboration is inevitable: It is not a matter of whether we will do it, but rather when we will do it.... In our case, I just have one regret: we should have started one year earlier.” major retailer

Why the regrets for having waited to start? Consider the following documented results produced by companies that have already launched data synchronization initiatives.

An item synchronization pilot between Procter & Gamble and their customer H.E. Butt yielded the following:

- 75% reduction in invoice deductions due to invoice pricing and product delivery discrepancies
- 30% improvement in the number of accurate purchase orders received
- 80% improvement in “speed to retail” for new items, price changes, and promotions⁴⁶
- 99.8% retail scanning accuracy achieved (versus 85% before the pilot) [Of course, this increase in scanning accuracy would apply to point of shipment receipt for non-retailers.]

According to an A.T. Kearney paper on data synchronization⁴⁷, Procter and Gamble expects synchronization to:

- Eliminate 30,000 to 50,000 hours per year in unnecessary transcription work
- Reduce stock-out incidence by 10%
- Reduce the time required for new item introduction by 80% in the U.S. alone
- Save them a minimum of \$25 million a year

At the Retail Systems 2002 conference, Randy Salley, Wal-Mart’s vice president of merchandising, reported that their item synchronization pilot with Procter & Gamble netted the following results:

- Reduction in data maintenance time from 15-30 days down to 1 day
- 98% up-to-date synchronization

⁴⁶ Reduced the average time required to communicate and execute changes from 10 days to 2 days

⁴⁷ Assessment and recommendation paper prepared by A.T. Kearney for the GMA-FMI Trading Partner Alliance titled, “Action Plan To Accelerate Trading Partner Electronic Collaboration”

- 15% market share (up from 5%) in the early weeks of a new item introduction

As Salley put it, "The ability to compete at the speed of information will determine winners and losers."

Sara Lee reported a reduction of 59% in cost mismatches after the initial 90 days of their price synchronization pilot. Item mismatches were eliminated. The remaining mismatches were resolved in half the normal time (down from 5+ days to 2-3 days for resolution).⁴⁸ Additional benefits realized include:

- Short pays down 86%
- Over pays down 81%
- Errors resolved in 2 days versus 10-30 days

The results from a study in the foodservice industry on the anticipated impact of data synchronization reported that:

- As much as 63% of manufacturer invoice errors can be prevented if item, price, and promotion data can be aligned
- Misalignment of item and price data is responsible for 21% of distributor invoice errors

At the Grocery Manufacturers of America (GMA) Executive Conference in White Sulphur Springs, WV June 10, 2002, Bill Grize, president and CEO, Ahold U.S.A., Inc. speaking of the need for manufacturers and retailers to move forward with global data synchronization said, "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."

WIIFM for Healthcare

But, are there any statistics that begin to describe the benefits that organizations in the healthcare community could expect to realize? Fortunately, some documentation is available. And, though much of it is anecdotal, collectively it provides a glimpse into the muck and mire that is the state of information in the healthcare community, today, and the positive impact that addressing these conditions could have on every aspect of the healthcare community.

Garren Hagemeyer of HCEC describes an overview of the benefits healthcare supply chain members could realize as follows: "Providers would get the products they order at the right price (fill rates would go up and pricing errors would be decreased). Providers would eliminate invoice discrepancies and rework. Providers and GPOs would improve contract compliance which would reduce product costs. Distributors and Manufacturers would eliminate rework of orders, returns and duplicate shipments, reduce telephone calls from customers, and improve contract reporting, improve rebate accuracy, and reduce errors in transactions between manufacturers and distributors."

A study was conducted for the medical/surgical supply chain to (1) determine the feasibility of adequately addressing the data synchronization problem in healthcare and (2) identify the benefits that could be realized by the industry if standards and a centralized information repository (i.e., a product data utility) were put in place and utilized.⁴⁹ The study identified the following benefits for each industry segment:

⁴⁸ Source: Martha Uhlhorn, EVP eCommerce & Category Mgt, Sara Lee presentation to the Magazine Publishers of America 3/18/2002.

⁴⁹ Source: Medical PDU Feasibility Study; CHes – HCEC; 2003; Attachment D: PDU Value

Manufacturers:

1. The electrical industry conducted a benefits assessment after their industry PDU was implemented. Annual savings to manufacturers were documented to be \$97,000 for every \$10 million of sales—0.97% of sales.
2. Substantial direct cost savings through elimination of product errors, accelerated time to market, and unprecedented market visibility of products to the industry.
3. Reduction of errors and bad data between trading partners and freeing up of staff time for more revenue producing pursuits
4. Single point of distribution of product information to all participants in the medical supply chain. Eliminates multiple customized product data feeds.
5. Single point for accurate UPN data to get distributed to the supply chain so value of UPN markings can be derived.
6. Easier to integrate product information after manufacturer mergers and acquisitions.
7. More rapid distribution of product data on new product introductions to increase sales of new products and reduce invoice errors on new products. Also applies to new products acquired through acquisition
8. Rapid distribution of information on discontinued and replacement products.
9. Cleansing internal information reduces errors in product data distributed to the supply chain thereby eliminating invoice errors to the supply chain.
10. Small business manufacturers: single source for product information distribution. Much easier for their products to reach more Distributors/providers in the supply chain.
11. Multi-divisional companies without a single ERP system: single source of catalog data for all divisions within the company.
12. Manufacturer Direct Vendors: reduced invoice errors because of more accurate product data used by provider organizations.
13. Validation and data field matching in a PDU enables more accurate ordering, bill paying, rebates and administration fee calculations, etc. Processing transactions could then become more efficient and accurate.
14. The creation of a web accessible healthcare PDU data element to link provider's organizations, distributors, etc. back to manufacturer's web site for enriched information on each of their products.

Distributors:

1. The electrical industry conducted a benefits assessment after their industry PDU was implemented. Savings to distributors were documented to be \$73,000 for every \$10 million of sales—0.73% of sales.
2. Substantial direct cost savings through elimination of product errors, accelerated time to market, and unprecedented market visibility of products to the industry
 - Wal-Mart – Identified and eliminated 30% of items that were discontinued.
 - Shaw Supermarkets – Saw a 5-10% increase in market share by the more rapid arrival of new items. "If we did nothing but changed the way we transact new item information, this in itself would be worth the investment."
3. Single source for accurate product data from hundreds of manufacturers reduces:
 - Multiple data feeds
 - Data cleansing efforts
 - Personnel manually loading catalog data
4. Timely product data on both new products and discontinued products
5. Enables the following business enhancements:

- Fewer invoice errors with suppliers and customers
- Reduction in reconciliation of rebates/charge back mismatches with manufacturers
- Automatic replenishment by suppliers
- Closer integration with customer's systems
- Tighter integration with eCommerce exchanges

Hospital IDN:

1. Accurate and consistent item information throughout the healthcare supply chain
2. Easier and faster sourcing of products from prime vendor distributors, healthcare exchanges, and direct from manufacturers
3. Matching of product data master files to GPO and local contract files to ensure that hospitals are being charged the lowest contracted prices for purchases.
 - A Novation study estimates 2%+ reduction in product pricing because of reductions in payment of greater than contract pricing.
4. Automated loading of new items with accurate product information and maintenance of existing items
5. Standardized identification of product information throughout the supply chain

Enables:

 - Leveraged purchasing to achieve lower prices based on visibility of purchased volumes
 - Increased patient safety
 - Improved product standardization
 - Improved product utilization
 - Increased overall operating efficiencies
 - Reduction in invoice errors by 50%
6. Master file of UPN bar codes enables use of automated identification throughout the supply chain to increase patient charges and reduce medical errors

eCommerce Exchanges:

1. Customers able to source and order products from the exchange easier, faster, and more accurately
2. Single source for accurate and robust product data from hundreds of manufacturers
3. Reduction in multiple data feeds
4. Reduction in data cleansing efforts
5. Reduction in personnel manually loading catalog data
6. Open and neutral repository
7. Standardized data for all members of the supply chain
8. Eliminates multiple standards for product data
9. Gives a single point for standards organizations
10. Potential for numerous value added services to member hospitals once product data is accurate and consistent
11. Opportunity to offer enhanced data mining and reporting capabilities
12. Data cleansing services can include catalog master maintenance
13. Product information accuracy for all members of the supply chain including
14. Hospitals who order through the exchange
15. Distributors who receive orders through the exchange
16. More rapid new product introductions and sales

17. Current UPN bar code standards are recognized

GPOs:

1. Increased Sales of GPO Items/GPO distribution Contracts.
 - Easier for customers to match items they are buying to items on GPO contracts
 - Easier for customers to identify product standardization opportunities
 - Easier for customers to identify items stocked by their GPO distributor
2. Single source for accurate product data from hundreds of manufacturers
3. Reduced and simplified data feeds from potential manufacturer contractors
4. Reduced data cleansing efforts
5. Better product identification for sales tracking to capture administrative fees and rebates for GPO
6. GPO is able to more quickly determine and aggregate information on the new items members are buying that need to be added to GPO contracts
7. Enhanced relationship with members:
 - Better product data for members
 - Healthcare PDU will become the basis of product item master in all customer Materiel Management Systems and Contracts systems
 - Easier sourcing of products by members
 - 100% eCommerce by members (to include invoicing)

But, there is additional evidence from the healthcare industry that points to the benefits of having and utilizing a standardized approach for synchronizing data in the industry. "Standardization lowers the costs of implementation for everyone."⁵⁰ "Many hospitals, GPOs, and suppliers spend millions of dollars annually synchronizing product information. Unfortunately, the data matching is often done against non-authoritative sources."⁵¹

Paul Higday, VP Program Development at Owens And Minor, concurs, "The current state of the industry is to cleanse/synchronize product data 'after the fact', i.e. months after an order is placed and the product is delivered. While this process can help ensure an accurate historical analytical view of purchasing, inventory, etc., it doesn't solve the real-time supply chain issues that inaccurate product data causes.... The retail industry has chosen to adopt a set of standards and technologies that solve their {data synchronization} problem efficiently and effectively. In Healthcare, we've largely chosen to address the problem individually, resulting in a significant increase in cost without much success."

And, since there's no standardized mechanism for keeping the cleansed product information up to date over time—as values change, new products are introduced, older products are discontinued, etc.—the companies suffer from data decay (i.e., get back out of sync with themselves and their supply chain partners as information changes). This recurring expenditure to clean up information that (1) once was clean and (2) could have been kept clean—had a standard for ongoing synchronization been put in place and implemented by the industry—is unnecessarily wasteful. Certainly, the money saved by avoiding the need for annual data clean up will more than offset the costs to implement a data synchronization solution.

⁵⁰ Source: Dennis Black, Director eCommerce, BD

⁵¹ Source: Presentation by Craig Wigginton; VP, Chief Technical Strategist; Neoforma; "The CHES/HCEC Product Data Utility Feasibility Study"

A study conducted by Consorta on a group of its member hospitals revealed similarly promising savings. They pulled the hospitals' data and looked at their processes and annual spend. By benchmarking against other industries, they identified the savings that hospitals could glean if they had good data. Even though the hospitals studied had already centralized their purchasing and had improved much of their data internally, the study still showed that the potential opportunity for annual savings ranged from 3.6-12.6% of their total spend.⁵²

In a July 2004 briefing⁵³, Kathleen Garvin, Program Manager for the DoD Data Synchronization reported findings from internal data analysis. She highlighted three seemingly straightforward information elements that could make or break an organization's ability to effectively order, receive, and pay for products (manufacturer name, a standard item part number, and an accurate unit of measure). She indicated that for one representative medical/surgical manufacturer, the DoD had over 400 different manufacturer names on file.

She highlighted the problems created by not having standardized item numbering in med/surg. She showed eight different product ids for the same product. Each id came from a different distributor. No two were alike. And, none of the ids were the actual product id used by the manufacturer. She highlighted the inconsistency of unit of measure data by indicating that "10% of packaging data provided to DSCP by manufacturers are wrong or incomplete".

Summarizing the results obtained from their global data synchronization (GDS) initiative with Wal-Mart, Johnson & Johnson Consumer reported the following:

	Before GDS	After GDS
Percent of out-of-stocks that were data integrity related	2.5%	0%
Item set up	Manual; averaged 10 days	Automated
Item maintenance	Manual; averaged up to 10 days	Automated; less than 24 hours
Percent of deductions that were data integrity related	.1%	0%

Commenting about the project, Johnson and Johnson representatives said, "Along with RFID, GDS is one of the greatest opportunities for collaboration throughout the value network that should be rapidly adopted."⁵⁴ "We learned how critical data management and data quality are to the trading partner relationship"⁵⁵

No wonder, the savings potential for hospitals that choose to address the data integrity problem is enormous. Consider that for hospitals, 7% of all purchases have invoice errors. If this affects just 30 to 50% of the entire potential, healthcare can save between 1.72 to \$2.9 billion a year.⁵⁶ The Department of Veterans Affairs (VA) and the Department of Defense (DoD) jointly spend \$800M a year on medical/surgical (med/surg) items and conservatively estimate that their facilities could reduce the cost of med/surg item purchases by 1-4% or \$8-\$32 million a year using synchronized data to leverage joint buying power.⁵⁷

⁵² Source: Dennis Byer, Senior Director of IT, Consorta

⁵³ Source: "Department of Defense: A Case for Med Surg Data Synchronization and Product Data Utility (PDU)" Kathleen Garvin, July 2004

⁵⁴ Source: Michael J Haas, Vice President of Information Management, Johnson & Johnson Consumer/Personal Care & Consumer Pharmaceuticals Group

⁵⁵ Source: Kyle Thompson, Global Data Strategy Manager, for Johnson & Johnson Consumer Companies, Inc.

⁵⁶ Source: CHES GLN Marketing Plan, page 3

⁵⁷ Source: Veteran's Administration and Defense Supply Center Philadelphia Directorate of Medical Materiel (DSCP) Joint Incentive Funding Data Synchronization For Medical Surgical Items

“Suppliers can benefit by reducing the EDI errors that occur when customers attempt to order the incorrect product quantity or purchase a discontinued product. Errors in product data also lead to pricing errors. Reducing the number of pricing errors would be a significant benefit for the entire healthcare supply chain.”⁵⁸

Paul Higday, VP Program Development at Owens & Minor, highlights the benefits of data synchronization to distributors. “As an organization that sits in the middle of the supply chain, accurate and timely product information is vital to our success. The better ‘synchronized’ data is between our customers and our suppliers and us, the lower our operating costs will be. Accurate product data helps us by reducing order processing time, decreasing invoice discrepancies, and ensuring that the correct product gets to the customer in a timely manner.”

But, perhaps even more significant than the cost savings are the patient safety impacts associated with lack of data synchronization. As Christine Vincent, Global Healthcare eBusiness Director for AGFA, notes, “Delivery of the right product at the right time and place is critical to the consumer and their health. This goes beyond the economic benefit of synchronized data. Correct data may also result in decreased liability for errors in identification and delivery of healthcare related products.”

We all acknowledge that, in the end, the collective responsibility of everyone in the healthcare supply chain boils down to taking care of the patient’s needs. As Steve Gundersen, Vice President, Corporate National Accounts, BD, points out, “Ultimately this all comes down to the end customer, the patient. Quality of healthcare and the cost of healthcare are the most important concerns.” Of course, the effectiveness, cost efficiency, and safety with which this industry is able to operate directly or indirectly affect every one of us.

Christine Vincent of AGFA emphasizes, “The cost savings are certainly important. But, the health of the ultimate consumer must be a consideration, as well. Reducing errant data can result in improved physical health. By eliminating errant invoices and the administrative effort it takes to fix those errors, staff members are allowed to focus on more productive activities. Reconciling invoices and rebates through the GPOs and contracting agencies is an unacceptable drain on resources.”

Mike Mahoney, CEO of Global Healthcare Exchange, emphasizes that “The nature of healthcare, however, creates even greater problems {than in retail} when buyer-seller product data is not synchronized. For example, when a product is not available, potentially life-threatening procedures may need to be rescheduled. Even postponing non-critical procedures can have a negative impact on the financial health of hospitals, which are under increasing financial pressures.”

But, there’s another aspect to patient safety that’s directly related to the accuracy and consistency of information throughout the healthcare community. For instance, “patient safety improvements can be had through better identification of products targeted for recall or items that have reached their expiration dates”.⁵⁹ In addition, the efforts to establish the electronic health record (EHR) have led to a growing realization that the data collected must go beyond mere clinical information to also reflect correct product utilization for specific patient needs. “National efforts around electronic health records will push the need for reliable information (including supply information about what a particular patient might have received during a hospital stay).”⁶⁰ “The electronic health record is clearly dependent on synchronized data.”⁶¹

⁵⁸ Source: Dennis Black, Director eCommerce, BD

⁵⁹ Source: “The Case for Data Synchronization”; MHS Assistance; March, 2004

⁶⁰ Source: Joe Pleasant, CIO, Premier

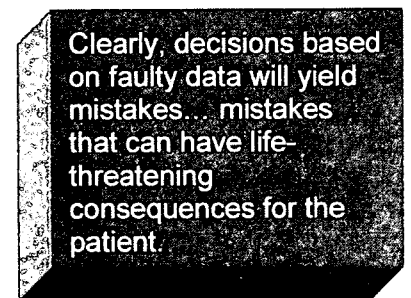
⁶¹ Source: Dennis Black, Director eCommerce, BD

EHR organizers are rapidly recognizing that this added intelligence is impossible without accurate product ids and synchronized data across the supply chain. Failure in this area hits at the very heart of every healthcare supply chain participant's ultimate concern (i.e., patient safety). Consider the following:⁶²

- More than two million patients (1 in 20) contract infections in the U.S. annually (est. 103,000 die).
- Hospital infections add \$28 billion to the nation's health cost per year.
- Hospital infections are now the fourth leading cause of death in the U.S. behind heart disease, cancer, and stroke according to the Centers For Disease Control.
- An Institute Of Medicine report stated that "as many as 44,000-98,000 people die in hospitals each year as the result of medical errors".⁶³

Consider just one example of the role that inaccurate information can play in keeping these numbers high. Inconsistent or inaccurate product information—from one healthcare provider to the next—can easily mask a pattern of negative interactions between products or between products and particular patient conditions. Such a pattern would easily go undetected if the providers supplying such evidence identified the products involved differently.

But, the problem is broader than just tracking unexpected interactions. The differences between sterile and non-sterile, latex versus non-latex, single versus multiple use, etc. have dire implications for patients. As such, inaccurate identification of products can lead to the unintended misapplication of those products in the healthcare process.



The fact is that lack of consistent accurate information across the supply chain—and most critically in the hands of the provider—is pivotally positioned as a potentially lethal contributor to these otherwise preventable medical errors. Clearly, decisions based on faulty data will yield mistakes...mistakes that can have life-threatening consequences for the patient. And, as we've seen from the results of the DoD pilot, the quality of the data across the healthcare supply chain is worst at the provider level...precisely where it is most critical for patient safety!

Accurate—and, therefore, reliable—data throughout the supply chain (courtesy of data synchronization) is essential for tracking medical procedures and the products used. Failure to achieve data synchronization in healthcare prevents the ability to:

- Associate particular products to best patient outcomes
- Identify products that may contribute to infections or adverse events in certain circumstances
- Recall items in the most timely and complete manner
- Reliably track and link devices to patients (e.g., implants)
- Perform more timely surgeries (courtesy of product UPNs linked to physician preference cards and reduced ordering time from OR Management Systems through MMIS)

⁶² Source: Materials Management In Health Care, May 2005 "The Dirt On Infections And Patient Falls" referenced in presentation at AHRMM by John Clarke, SAIC; titled "Department of Defense A Case for Data Synchronization and Product Data Utility (PDU)"; July, 2005

⁶³ Source: Journal of Healthcare Management, Vol. 18, No. 4

If only one of the estimated 44,000 to 98,000 people who die in hospitals each year as the result of medical errors does so as a result of inaccurate product identification, then the problem is well worth fixing. Of course, the likelihood is that it's much worse than that.

Now, it should be noted that because product information is so inconsistent and inaccurate throughout the healthcare supply chain, it's hard to quantify the degree to which data synchronization in healthcare will improve patient safety. But, it's safe to say that data synchronization will clearly have a positive impact on this area of critical concern. And, given the industry's stated commitment to quality patient care, it would seem that data synchronization is an area where the industry should voluntarily step forward and improve patient safety.

But, as important as safety is, it's not the only area where the patient is affected by bad data. As Mike Mahoney, CEO of Global Healthcare Exchange, points out, "When clinicians have difficulty finding the right product to order, they have less time to spend on patient care." Kathleen Stickane, President of the Association of Healthcare Value Analysis Professionals, emphasizes that when it comes to data synchronization, the biggest issue for her membership is that "Clinicians and purchasing agents speak different languages. This misunderstanding can result in the wrong product being delivered with a delay in receiving the product that's actually needed." Clearly, consistent accurate data made available to all pertinent personnel within and between organizations would alleviate this sort of disconnect and its negative impact on all concerned—including the patient.

So, bad data not only adds cost to all members of the healthcare supply chain and makes it impossible to reliably track clinical outcomes, it also unnecessarily taxes valuable limited medical resources that could otherwise be administering to their patients. Once again, we see that each of us ultimately pays the price for bad data in the healthcare supply chain through increased healthcare costs, increased taxes, undermined patient safety, and now, distractions from patient care.

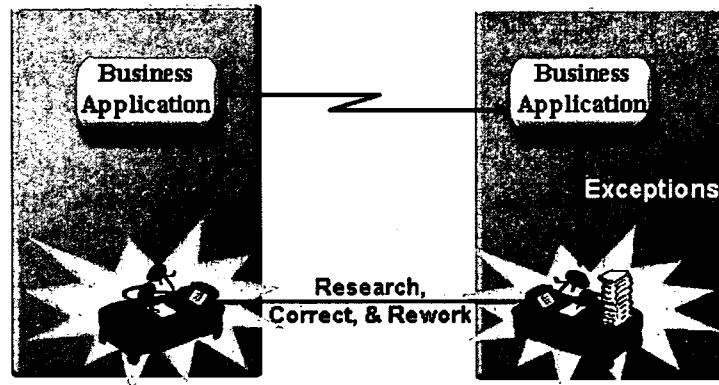
In June 2005, the DoD, VA, and FDA met to discuss the critical importance of standardized and synchronized data throughout the supply chain. It was recognized that industry-wide data synchronization was a necessary precursor to successfully implementing RFID for devices and other information-based initiatives aimed at improving patient safety.

So, What Needs To Be Done?

To begin with, we know that inaccurate information drives exceptions that, then, require manual intervention. But the impact of these exceptions is even worse for companies that have invested in external and internal integration (e.g., EDI, enterprise application integration or EAI⁶⁴, etc.). Having invested the money and resources to remove key-entry and manual involvement from the process, these expenditures are rendered worthless every time there's bad data. The sports car is forced to downshift to creeper gear for the remainder of the process.

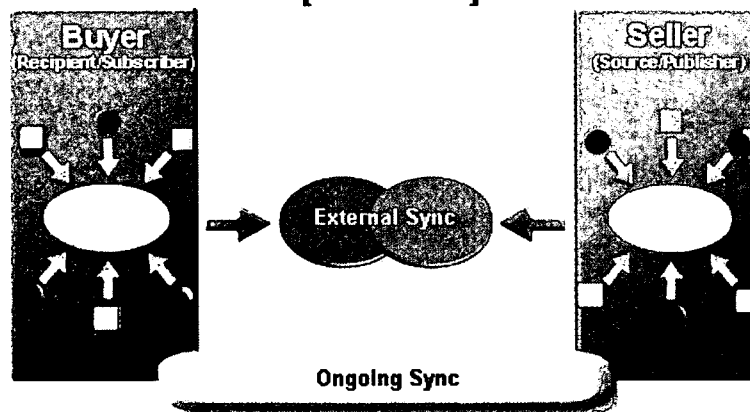
⁶⁴ See Appendix for an explanation of EAI.

Integration + Bad Data = Manual



Whether these information inconsistencies exist between systems or databases, departments, divisions, or companies, they are exceptions nonetheless and force manual intervention to address them. Therefore, successfully addressing data synchronization must include three phases (1) synchronizing your information with yourself (internal synchronization), (2) synchronizing your information with your trading partners to get on the same page with one another (external synchronization), and (3) establishing a process by which the two of you will *stay* in sync with yourselves and with each other as your data changes *over time* (ongoing synchronization).⁶⁵

Global Data Synchronization [The Goal]



Internal synchronization ensures that item and partner data are consistent throughout the organization. It enables humans and business applications to access and act upon information that does not vary from system to system, database to database, department to department, division to division, and so on. Both you and your trading partners must complete internal synchronization before embarking upon external synchronization.

⁶⁵ See the Appendix for a more detailed description of each of the global data synchronization phases.

External synchronization ensures that the information in both your and your trading partners' companies is consistent. Synchronizing with just yourself—but not your partners—will not eradicate the parade of exceptions that are plaguing you and your partners. Indeed, the fact that information is not in sync across company boundaries is a key contributor to why today's businesses find themselves steeped in errors and inefficiencies. And, these processing exceptions and the resulting manual rework will continue to undermine effectiveness and bottom lines until they are addressed through cross-company data synchronization.

To appreciate the impact that external synchronization can have, consider the results reported by Proctor and Gamble. They reported having saved an estimated \$25 million since they began uploading item, location, and trading partner information.⁶⁶

It's important to recognize that internal and external synchronization do not mean getting just one department on either side of the relationship in sync—purchasing and order processing, for instance. If either party leaves one or more portions of its company out of the synchronization “loop”, exceptions will remain when dealing with that area.

Imagine, for instance, that a purchaser has internally synchronized its purchasing, inventory management, and accounts payable areas and their supplier has internally and externally synchronized their order processing, inventory management, and shipping areas—but *not* accounts receivable. Both the buyer and seller would most certainly realize and benefit from a marked improvement in the accuracy of order processing. The reduction in exceptions would minimize manual intervention and drive improved fill rates, reduced order cycle time, etc.

However, with the accounts receivable area of the seller still being out-of-sync with other areas in their own company—as well as, those of their customer—the invoice/pay process would still be laden with errors, delays, exception research and correction, etc.

Of course, without ongoing synchronization—a process by which the source and the recipient can remain in sync as information changes—all the effort to get in sync to begin with will be undermined and eventually eradicated as the information decays over time and the two organizations gradually fall back out of sync with one another (and themselves).

This three-legged process of (1) getting in sync with yourself, (2) getting your and your partners' data in agreement, and (3) staying in sync internally and between organizations is the essence of what generates all the benefits from global data synchronization. It ensures that exceptions are minimized and integration and automation investment returns maximized. It's the “secret sauce” in your recipe for process improvement and supply chain efficiency.

Summary

The impact of “out-of-sync” item information is felt everywhere that information is used in your and your trading partners' businesses (e.g., contracts, orders, invoices, shipments, payments, rebates, advertising, promotions, product use analysis, inventory management, market intelligence, etc.). Whenever there's a discrepancy between the information your company has on file and the related information held by a trading partner elsewhere in the supply chain, an exception occurs.

⁶⁶ “Time for a Change”; Jennifer S. Kuhel; Supply Chain Technology News; July/August 2002

Exceptions can be purely information-based (e.g., incorrect price on an order or invoice). Or, they can be physical (e.g., the incorrect product shipped to the customer or an incorrect bar code printed for a product). Regardless of the category, each exception requires manual intervention and creates delays...which increase the cost of doing business and undermine the quality of the trading relationship. As Michael Stanley, Director SCIS Content & Business Process for Trinity Health, puts it, "Throughout this industry, we have expensive people doing repetitive things just to make up for mistakes generated by the bad data."

The fact is, the problems of information inaccuracies in the U.S. healthcare community are extensive. Most every one in the industry secretly admits it, and in the past publicly downplayed it. But, that's changing. There's a growing admission that this supply chain-wide information disconnect directly contributes to higher costs, lowers service levels, and ultimately affects every citizen, their employer, and the government. As Mr. Stanley puts it, "The lack of accurate information throughout the healthcare supply chain is a tremendous cost burden across the industry." And, there's a growing appetite to address the problem. As Dennis Byer, Senior Director of IT for Consorta, puts it, "This isn't really the next 'killer app'. It's more just common sense. We should have fixed this years ago."

The good news is that this is, in fact, an eminently fixable problem, and the mechanisms to address the problem for the *entire* industry are well within reach. Data synchronization standards are in widespread use in a variety of industries and the technology of the Internet has made it possible for even the smallest organizations to participate. If one year from now healthcare has still not addressed this problem, the members of the industry will need only to look into a mirror to see who to blame.

But, solving this problem will require proactive participation on the part of all industry segments. Neither providers, GPOs, distributors, or manufacturers can sit on the sidelines and still expect the problem to be resolved.

It is incumbent on the leaders from each of the key segments in the industry to work together to demonstrate to the rest of the healthcare community how it can and should be done. Collaboration among the key stakeholders is critical to define mutually beneficial processes that will maximize the ROI for all concerned.

Think about it. If the most competitive buy- and sell-side companies in the retail sector can successfully work together to rollout an industry-wide data synchronization initiative, the healthcare community certainly can, as well. 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." When it comes to data accuracy and consistency across the supply chain, our advice to the healthcare community is, "Physician, heal *thysself*."

For those interested in finding out more about the current state of data synchronization standards in the healthcare industry—and those wanting to help mold those standards—go to www.chestandards.org

APPENDIX 1 – GLOSSARY OF TERMS

TERM	DEFINITION
EC	Electronic commerce. The strategic application of technology to facilitate internal and/or external business processes to achieve organizational objectives.
Business Application	Computer software that automates one or more business functions. (Examples include order processing, accounting, inventory management, logistics, contract management, and other applications.)
Integration	The automated exchange of information between business applications without requiring key-entry or manual intervention.
EAI	Enterprise application integration. The integration of internal business applications and the automation of pre-processing steps that facilitate that interaction (internal electronic commerce).
B2B	Business-to-business. The electronic interaction between to companies (external electronic commerce).
EDI	Electronic data interchange. The electronic exchange of time- and content-critical business information between the business applications of the sender and the receiver. The information is formatted in a standardized format. (Examples of domestic and international EDI standards include ANSI X12, UN/EDIFACT, ODETTE, CII.)
VMI	Vendor managed inventory. The use of point-of-sale/use data and customer replenishment algorithms to allow a supplier to automatically trigger the shipment of product to the customer without first requiring the receipt of a purchase order.
ERS	Evaluated receipt settlement. The use of receiving information and pre-negotiated pricing and payment terms by the customer to allow for payment without requiring an invoice.
CPFR	Collaborative planning, forecast, and replenishment. A collection of processes that enhance supply chain efficiency by facilitating buyer/seller interaction through improved information visibility and utilization. Most steps precede the actual purchase step.
SBT	Scan-based trading. The use of point-of-sale/use data to (1) determine what is owed by the retailer to the supplier and (2) drive the payment process. It also includes improvement in various point-of-purchase operations to reduce cycle time and speed product flow.
EFT	Electronic funds transfer. The electronic transaction and exchange of value (money) between two or more financial institutions. EFT is also used to describe the electronic triggering of funds movement by the payor (company paying the money) to their financial institution. It may also include the exchange of remittance information between the payor and the payee (company receiving the payment).

APPENDIX 2 - RESULTS OF DOD PILOT—PROBLEMS FOUND

Type of Problem	Mfr	Dist	GPO	Provider
Missing Middle Pkging Levels	15-20%	1-4%	20-25%	15-25%
Hard "Pkging Quantity" Errors	1%	1%	2%	2-5%
Unit of Measure Confusion/Misuse	2-6%	1-3%	2-5%	Unknown
Missing Packaging—not middle level	3-8%	3-8%	3-7%	5%
Manufacturer Name Problems	n/a	2-5%	1-4%	30%
Obsolete Products	1-4%	2-5%	1-8%	5-15%
Missing Product Brand Names	2-5%	5-10%	5-10%	20-25%
Incomplete Item Descriptions	5-15%	3-12%	5-15%	10-20%
Wrong Customer Unit Prices	Unknown	1-2%	n/a	1-2%
Customer Paid More Than Lowest Contract Price	n/a	Unknown	n/a	3-6%

APPENDIX 3 - DATA SYNC IMPLEMENTATION OVERVIEW

Global data synchronization (GDS) focuses on achieving consistency of target information values within and between organizations. Of course, such synchronization cannot be accomplished without the foundation of standards to clearly define (1) the information to be synchronized and (2) the processes by which such synchronization will be carried out. With such standards in place, synchronization is executed in three stages, internal synchronization, external synchronization, and ongoing synchronization—performed in that order.

Internal synchronization ensures that each of the target information elements that will be synchronized (e.g., item number, price, description, etc.) is consistent throughout your organization. Said differently, when internal synchronization is successful, anytime a given information element is accessed anywhere within your company, it will have the same value wherever else it is used in the organization.

External synchronization ensures that the target information elements will be consistent between any two participating organizations—most often a buy-side and a sell-side trading pair. The core players in external synchronization are the source (the seller of the product) and the recipient (the buyer of the product).

Ongoing synchronization establishes a process by which participating organizations can stay in sync with themselves and with their data sync partners. It ensures accurate, consistent information within and between organizations even as that information changes and/or new items are introduced.

External and ongoing synchronization typically include the use of a central registry—sometimes called a product data utility (PDU)—and/or one or more service providers acting as onramps to that registry. The registry or PDU provides a central repository for all item and participant (called “party”) IDs. It verifies that each item or party ID is globally unique (e.g., a particular ID points to one and only one entity). The central registry and onboarding service providers enforce the standards that the industry defines in order to ensure that each industry participant adheres to those rules.

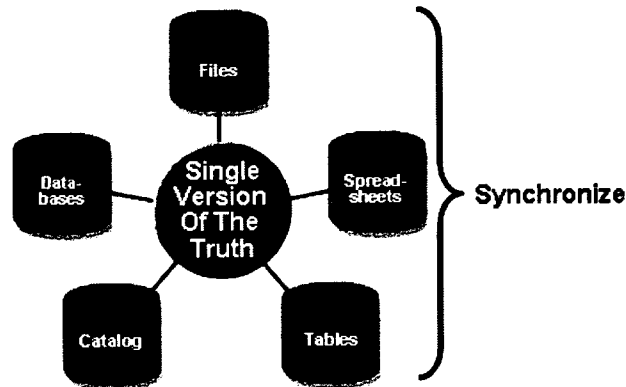
Typically, the central registry houses the least possible amount of the information about an item or party. It provides a pointer to the entity that controls that information. The “source” of the information (also called the “publisher”) controls which “recipients” (also called “subscribers”) will have access to see what information. In this way, a manufacturer—as the source of product or party information, for instance—can control what Customer A sees and what Customer B sees. Furthermore, the source of product information can provide different information to Customer A than Customer B where business requirements warrant.

Internal Synchronization

Step One: Internal synchronization begins with the identification of all internal storage locations (e.g., files, databases, desktop spreadsheets, cross-reference and look-up tables, catalogs, etc.) where the target information elements can be found. The end goal of internal synchronization is to make sure that these internal data stores remain in sync with one another on an ongoing basis after the launch of the data sync project.

Internal Synchronization

Internal Data Stores



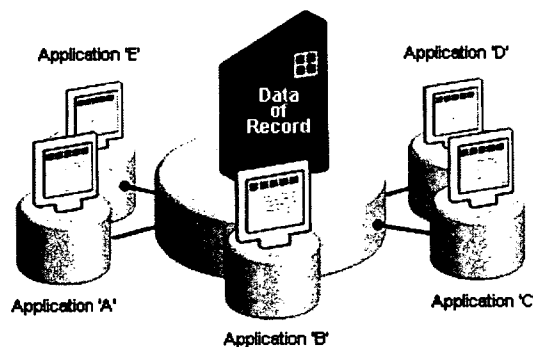
Step Two: The second step of internal synchronization is to identify (1) every business application that uses any of the target information elements and (2) every point where any of the target information elements can be modified. Whether it's initial input, value changes, or deletions, it's essential to leave no stone unturned when determining (1) who or what might alter a particular element's value and (2) where that modification might occur.

Having identified who uses the target information and where that information can be modified, you are now prepared to determine how you will control change access to the information and coordinate updates throughout your organization as information values change. In this step you will select one of three likely approaches.

1. In the first option, all applications will be modified to interact with a central data store that houses the data of record for the organization. In many instances this is highly impractical or difficult given the potential lack of flexibility in the existing business applications.

Internal Synchronization

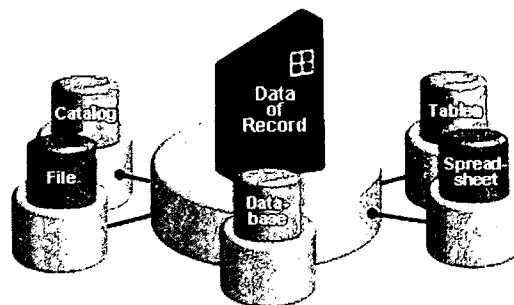
Data Use: Option One



2. The second option is to change nothing about the files or databases accessed by your business applications. Instead, this option elects to keep the organization's various internal data stores in sync

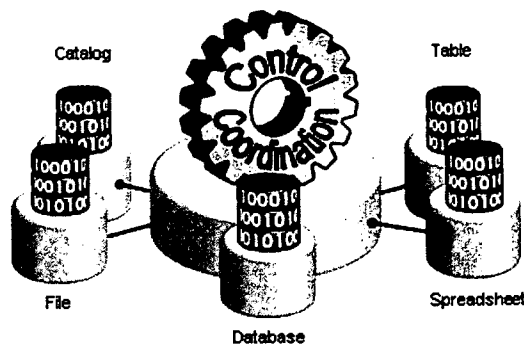
with a central data of record. This approach requires an internal sync engine to keep the organization's many data repositories in sync with one another via the central data of record repository. This can be accomplished in many ways, but most often includes the use of a catalog or product information management tool.

Internal Synchronization Data Use: Option Two



3. The third option is to keep existing files or databases in place and change nothing about where your business applications go to access information. However, this option elects to establish a virtual data of record. It selects one location per information type (e.g., product ID, description, dimension, etc.) where changes will be allowed. Change access for all other instances of that same information type will be prohibited. Like the second option, when a change takes place in the location of record for a given information type, all other satellite locations for that same data attribute are updated.

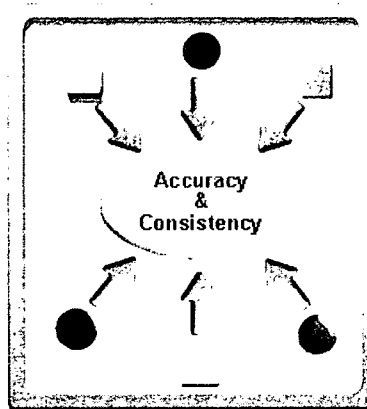
Internal Synchronization Data Use: Option Three



Step Three: Now that you've (1) located all instances of the target information to be synchronized, (2) controlled who or what can modify the information, and (3) established a coordination mechanism that ensures that all instances of the information will be updated whenever a change occurs, you're prepared for the final step of internal

synchronization. In the third step, you will cleanse the data. When this step is completed, two conditions will be true: First, every instance of the target information will be accurate. Second, where multiple instances of the same piece of information exist throughout your organization, every occurrence of that particular information element will have a consistent meaning across all occurrences.

Internal Synchronization Data Cleansing



External Synchronization

Once you're confident that you can keep all of the target information elements in sync *internally*, it's time to embark upon *external* synchronization. Once both the buy- and sell-sides of the relationship have synchronized internally with themselves, they must reach agreement on the correct values for each of the information elements (typically called attributes) they wish to keep in sync. There's a high likelihood that the two companies will find a number of discrepancies with the values that each believes to be "the truth". [These, of course, have been the culprits behind the parade of exceptions you and your partner have been experiencing all along.]

For each information element that is found to be "out of sync" between the two companies, you and your partner must each agree on what the correct value should be. There are four categories of information elements. An item information element that is:

1. Globally true for all subscribers (buyers)
2. True for all subscribers in a particular industry or trading community
3. True for all subscribers in a particular target market (e.g., geographic area)
4. Variable for each relationship (i.e., from partner to partner).

For information that is not different for each partner, the seller (source) usually establishes what the "truth" should be—since the seller is the source of the item. For information that is partner specific (e.g., price, saleable unit, allowances or charges, etc.), the values that are agreed upon are often negotiated, as necessary. While this can