

## Global Data Synchronization

*Building a flexible approach*



*An IBM Institute for Business Value executive brief*

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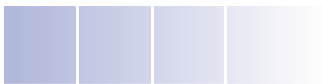
## Introduction

Retailers, manufacturers and distributors have entered a promising, yet challenging, period in their relationships. As trading partners recognize the importance of working more closely together to improve operational efficiency and service levels, and as competition becomes fiercer and margins continue to shrink, the way information is managed and shared is becoming a critical issue for industry executives to address. How can enterprises prepare themselves to share and leverage information with multiple partners while avoiding repeated redesign costs? A flexible solution that relies on enterprise data management and the Global Data Synchronization (GDS) vision will help companies effectively manage and synchronize standardized cross-enterprise data, as well as develop a robust foundation upon which the full benefits of trading partner collaboration can be achieved and scaled.

## Executive summary

Traditionally, manufacturers, retailers and distributors have exchanged initial product information using manual, paper-based processes. This information is rarely, if ever, updated as a product's attributes are changed over time. Thus, even when ordering or invoicing using electronic data interchange (EDI), companies experience inaccuracies as they conduct transactions based on older product data that does not resemble current product attributes. This has led to inefficiencies, errors and duplicative labor efforts among trading partners. In fact, lack of standards-based data synchronization has had a huge impact on the industry, contributing to over US\$40 billion in costs annually in operating inefficiency and lost revenue potential for retailers and consumer products companies.<sup>1</sup> As a result, the industry has concluded that it must hasten the adoption of data synchronization to boost the efficiency and effectiveness of the supply chain in order to achieve continued growth in earnings and shareholder value. High-quality data management is foundational to other value-creating collaborative initiatives as well, and has become an issue that must be tackled both internally as well as across trading partners.

A global standards-based data synchronization model, the Global Data Synchronization (GDS) vision, has emerged as the industry answer to facilitating a seamless, highly responsive supply chain, improving internal operations and providing a better buying experience for consumers. The GDS vision is enabled by

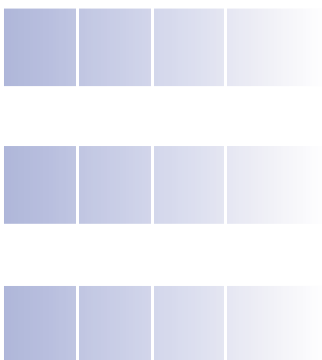


the Global Data Synchronization Network (GDSN), which is a federation of interoperable, certified data pools, a global data registry (the GS1 Global Registry), a set of standards established by EAN International and the Uniform Code Council, Inc. (EAN•UCC) through the Global Standards Management Process (GSMP), and enterprise software for product information management. This vision centers on:

- Continued development of industry-accepted standards
- Creation and adoption of the recently created GS1 Global Registry as the single global item registry
- Interoperability of industry data pools that leverage the GS1 Global Registry
- Deployment of product information management as the single internal source of information and the connection point to the external GDSN.

Organizations are leveraging the GDSN to streamline how product, service, location, organization, price and promotion data is created and exchanged within their own enterprise. Simply pushing out product data electronically via GDS to external trading partners without integrating those processes internally (generally across a vast departmental or geographic organization) can be shortsighted. Many manufacturers, retailers and distributors are already preparing themselves by actively refining their enterprise data management processes to enable internal and external data consistency, process integration and the accuracy of exchanged business information. Global standards, the single global item registry, interoperable data pools and enterprise data management capabilities will be instrumental to enabling trading partners to share clean data using industry-accepted standards.

The potential benefits of GDS increase as companies scale their synchronization efforts to all of their trading partners. Therefore, companies should pursue a flexible approach to enterprise data management and GDS that allows them to adapt quickly to industry mandates as well as specific partner needs. Such a flexible approach will enable companies to not only successfully share standards-based data with multiple partners, but also develop the infrastructure and processes necessary to engage in far-reaching collaborative activities, offering even greater benefits.

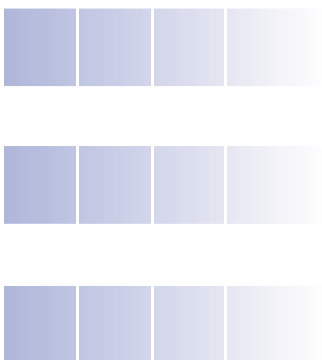


Ultimately, the true payback comes from the optimization of internal processes and external relationships enabled by a GDS foundation. Realistically, trading partners cannot effectively cultivate more complex relationships without engaging in enterprise data management and electronically synchronizing product information. The GDS vision helps ensure the alignment of crucial data across internal systems, improves the quality of data shared between partners, and provides more accurate data for consumers to make purchasing decisions. Additionally, GDS is foundational for the implementation of the electronic product code (EPC) and e-commerce.

Our recommendations for achieving effective enterprise data management and the GDS vision, based on extensive experience with key industry players, involve six key steps:

- 1) Define a data management strategy that includes enterprise data management objectives, priorities and owners.
- 2) Assess the state of data and related business processes within the enterprise.
- 3) Build an enterprise data management infrastructure, using a product information management solution.
- 4) Select a data pool that is certified as being compliant with EAN•UCC standards and is interoperable with other data pools and the GS1 Registry.
- 5) Define how the enterprise will measure benefits from its enterprise data management infrastructure and GDS, comparing “as is” to “to be” processes.
- 6) Assess how this new source of globally synchronized information can be used to enable additional internal and cross-trading partner value-creating collaborative initiatives.

By following these steps to designing a combined enterprise data management and GDS strategy, retailers, manufacturer and distributors can share accurate, standards-based enterprise data with multiple trading partners, regardless of which data pools or systems an enterprise's partners may use. This strategy will significantly improve the efficiency of electronic data interchange (EDI) and other collaborative activities, such as scan-based trading (SBT) and vendor-managed inventory (VMI), by enhancing the quality of internal data to be shared with partners. Moreover, it is a necessary preparation to realize value from the next step in supply chain collaboration – synchronized product movement information enabled by the EPC.



## *Data sharing challenges*

### **Today's complexity**

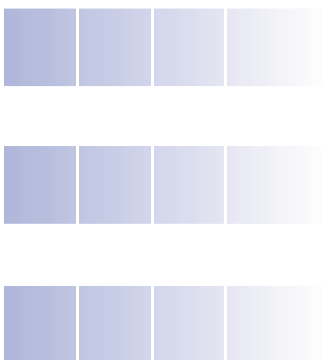
The sharing of product, service, location, price and promotion information is at the core of trading partner collaboration. However, in today's marketplace, the data existing within enterprise systems and the process for sharing that data with trading partners is often flawed. Within many enterprises, processes and data are poorly aligned and subsystems often do not connect with each other. This causes a lengthy chain reaction of problems that plague the industry. Manufacturers often communicate item and price information to retailers manually and in an ad hoc manner, leading to the creation of different data in key retail systems. Retailers are rarely consistent in their new item introduction and price data collection processes. Hence, manufacturers, distributors and brokers have to accommodate these differences and attempt to keep the information and processes aligned with their customers' needs. This results in suppliers relying on one-off methods to support many different retailer requests. Inaccuracies in retailer catalogs lead to purchase order errors, purchase order/invoice mismatches and eventually, invoice deductions. The net outcome is too many moving parts that cause upward of 30 percent of product data in retailer systems to be incorrect and 60 percent of invoices to have errors.<sup>2</sup>

Furthermore, the labor-intensive process of communicating and keying in item data leads to excessive inefficient new product introduction processes and delays to price changes at the store level. For example, in the consumer packaged goods industry, it can take up to 4 to 12 weeks, on average, to roll out a new product to a retailer.<sup>3</sup> Little, if any, of this time is dedicated to actual product design, manufacturing or delivery; rather, it is reflective of the inefficient sharing of product-related data that could be done electronically. These problems can result in decreased revenue growth and dissatisfied consumers.

Where companies are synchronizing data with trading partners electronically, they are often not doing it systematically. Some companies are synchronizing only some data electronically, while maintaining paper forms and manual processes for other data sets. To achieve data accuracy, companies should retire these paper forms and manual processes and transition to electronic data synchronization.

### **A need for change**

The retail and consumer products industries recognize the need for change and are beginning to demand system-to-system synchronization of product, service, location, price and promotion data from their partners. To achieve data synchronization on a many-to-many basis, global standards, enterprise data management and continuous



electronic synchronization of data have emerged as remedies that can address the root cause of data sharing problems, improve efficiency and speed up responsiveness throughout the entire supply chain.

Trading partners exchange two types of data: neutral data and relationship-dependent data. Neutral data is that which is generally shared between multiple parties and which is relationship-independent. It can be split into three categories:

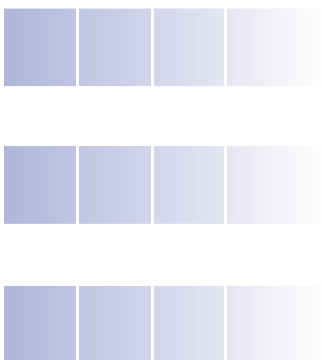
- *Core product data* – core data attributes that apply to all instances of any product (e.g., description, brand name, packaging, dimensions, etc.)
- *Category specific data* – data attributes that only apply to specific product categories (e.g., the color, grape and strength of a bottle of wine)
- *Target market data* – data attributes that are specific to product in a particular market (e.g., packaging indicators in a specific country).

Relationship-dependent data includes attributes that concern all terms bilaterally agreed and communicated between trading partners such as marketing conditions, price information and discounts, logistics agreements and more. The initial implementation of the GDS vision is focused on neutral data, with many standards now existing for core product data. Relationship-dependent data will be more difficult to standardize; however, even here, messaging choreography can be standardized to simplify the way this information is communicated.

Manufacturers, retailers and distributors are beginning to refine their internal data management processes to achieve internal and external data consistency and greater process integration. By embracing enterprise data management, leading players, including Albertsons, Carrefour, Unilever, Panasonic, GlaxoSmithKline and Ford Motor Company are steadily advancing the industry to a point where continuous electronic data synchronization can be achieved. In the process, they are propelling the industry effort to conform item data to global standards. Global standards-based data synchronization will provide a robust foundation and solid opportunity for realizing the full benefits of trading partner collaboration.

### ***Addressing data inaccuracy***

Keeping data clean and aligned internally and externally is a significant challenge for the industry. Companies must address two aspects of data management to enable industrywide data accuracy. Internally, they need to implement enterprise data management capabilities to create one consistent view of data across the enterprise. Externally, they need to adopt the GDS vision to realize a seamless and constant flow of accurate, standardized product information among trading partners.



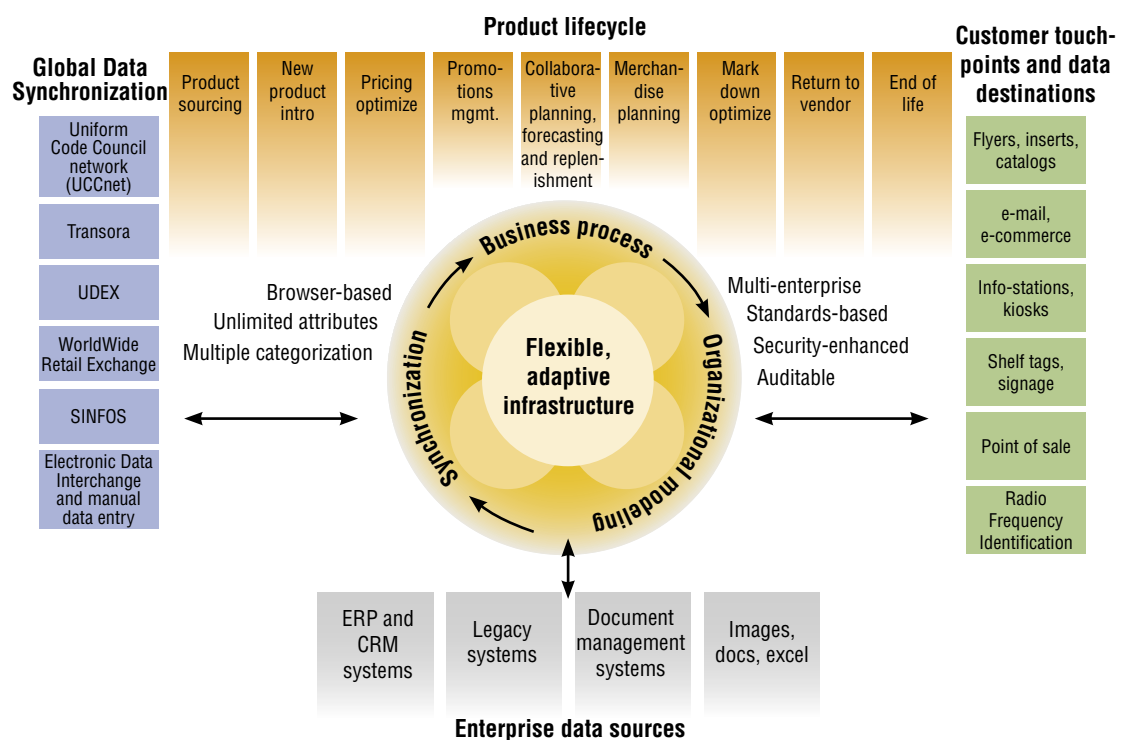
**“Most manufacturers look at [data synchronization] as a cost of doing business. But just having clean item data is a benefit to us.”**

– Pierre Bonura, Senior Manager of Sales Systems, Church & Dwight<sup>4</sup>

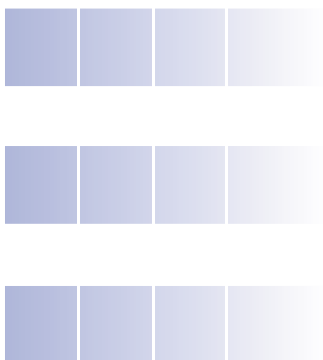
First, an enterprise data management system is critical for a company to achieve data consistency and process integration both internally and with specific trading partners (see Figure 1). Today, ERP and merchandising systems are largely inadequate to drive data accuracy and enable data synchronization. These systems are designed to deal with only a narrow subset of product information required to do transaction processing; they do not address the broader scope of product, service, location, price and promotion information required for GDS, EPC and e-commerce. By implementing an enterprise data management solution, a company creates one “version of truth” for all data within the company. Internal data across enterprise applications can be standardized and aligned using automated process choreography to establish one single source of comprehensive, accurate product information for the company. Any necessary changes to product information can be filtered through this one single source to automatically update not only internal systems but also partner systems.

**Enterprise data management** consists of people, processes and infrastructure. These components drive internal and trading partner-specific data consistency, process integration and the accuracy of business information within enterprises.

**Figure 1. Internal company view of enterprise data management.**



Source: IBM Software Group.





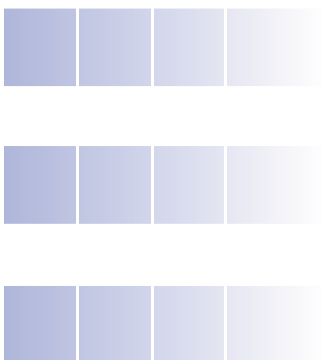
Second, companies should adopt the GDS vision so they can share accurate, standardized product information from their enterprise systems with their trading partners. Data synchronization, using industry agreed-upon data standards and system-to-system synchronization processes, provides an infrastructure that facilitates the smooth and timely flow of product information throughout the enterprise and among trading partners.

**GDS** is the timely and accurate updating of any finished product information across enterprises and borders based on a single, global registry that connects data sources from around the world, enabling data to be standardized and synchronized by trading partners on a near-realtime basis.

Originally, the GDS initiative was established by the Global Commerce Initiative (GCI) and GS1 (formerly known as EAN International and the Uniform Code Council) to define the processes and standards by which information can be cleansed and synchronized. The GDS vision is now enabled by the GDSN, a network of interoperable data pools, the GS1 Global Registry, a set of global standards established by the Global Standards Management Process (GSMP) and enterprise software for product information management. The GSMP is currently being used to define a single set of market item standards that will populate the GS1 Global Registry. At present, this includes eight core attributes, such as the Global Trade Identification Number (GTIN) ascribed to unique products and the Global Location Number (GLN) ascribed to unique locations. The GSMP also is working to define the items standards used more broadly in the industry. For instance, with the evolution of EPC, the GSMP is seeking consistency in both GDS and EPC standards in terms of core product information, such as description, brand name, color, height and weight, as well as location, price and promotion information.

Central to the GDS vision is the fact that it is not an IT initiative, nor is it managed solely by a company's IT department. Rather, it is a fundamental change in the approach to managing data, by understanding that data is something that exists beyond the walls of the organization and needs to be collaboratively managed with trading partners. GDS will touch people throughout the organization, and thus the organization as a whole will need to "own" its implementation and development. Those people who are engaging in GDS within the organization may include sales people, buyers, merchandisers or category managers, among others.

The industry must continue pushing the GDS vision forward to curtail inefficiencies and set the stage for further collaborative activities. Once product data (e.g., GTIN) and location data (e.g., GLN) are synchronized, the exchange of price and promotion can become a triangulation of GTIN, "ship from" GLN and "ship to" GLN



given agreed-upon price and promotion standards. The price and price promotion transactions will simply carry dates and quantities among the GTINs and GLNs. Additionally, the information infrastructure underlying the GDS vision will serve as the facilitator for automated process collaboration and advanced supply chain initiatives such as collaborative planning, forecasting and replenishment (CPFR); EPC IS (Electronic Product Code Information Services), the information services layer of EPC; e-commerce; and consumer-driven supply chains. Hence, it is anticipated that all supply chain initiatives and EDI activity that exist today will reach a level of automation and scale only hoped for in the past.

### **Price synchronization standards are emerging**

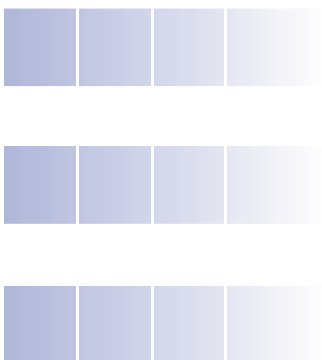
The industry is currently moving forward to establish standards around price sharing. Based on the GDS vision, prices can be shared when using three criteria together: the conditions document, the trading partner profile and the monetary document:

- The conditions document lists the requirements associated with a component of the price.
- The trading partner profile captures the basic “rules” which trading partners agree will govern their exchange of data.
- The monetary document includes the actual numerical amount of a price component.

Agreeing on standards will take some time. Additionally, the way this information is shared – using public data pools or some other means – will need to be determined by the industry. However, when those standards are in place, synchronized pricing data will help eliminate manual data entry errors, conflict between updated warehouse data and salesperson collateral and over-extended promotions. In addition, it will enable order quality and invoice matching benefits to become even more pronounced since the majority of non-quality orders and invoice deductions are typically due to inaccurate pricing information.

### ***Significant progress is being achieved***

The industry is not standing still. Data standards and synchronization have advanced substantially since the late 1990s (see Figure 2). Today, retailers, manufacturers and distributors are actively responding to the industry call to action. In 2004, 83 percent of consumer packaged goods companies report having active GDS efforts underway and 67 percent are actively working to synchronize their item data.<sup>5</sup> Retail implementation of item and price synchronization was widely enabled by 31 percent of industry retailers in 2003 and another 26 percent anticipated implementation by 2005.<sup>6</sup> And UCCnet, a U.S. data pool capable of registering information with the GS1 Global Registry, reports that the number of new member firms jumped by over 400 percent in one year, from approximately 750 firms in 2003 to more than 3,940 firms as of November 2004.<sup>7, 8</sup> However, companies still have significant strides to make.



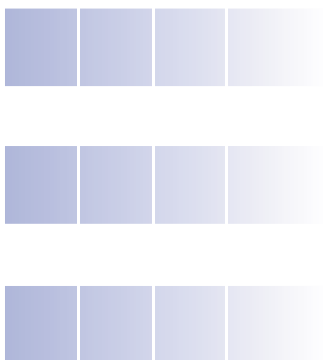
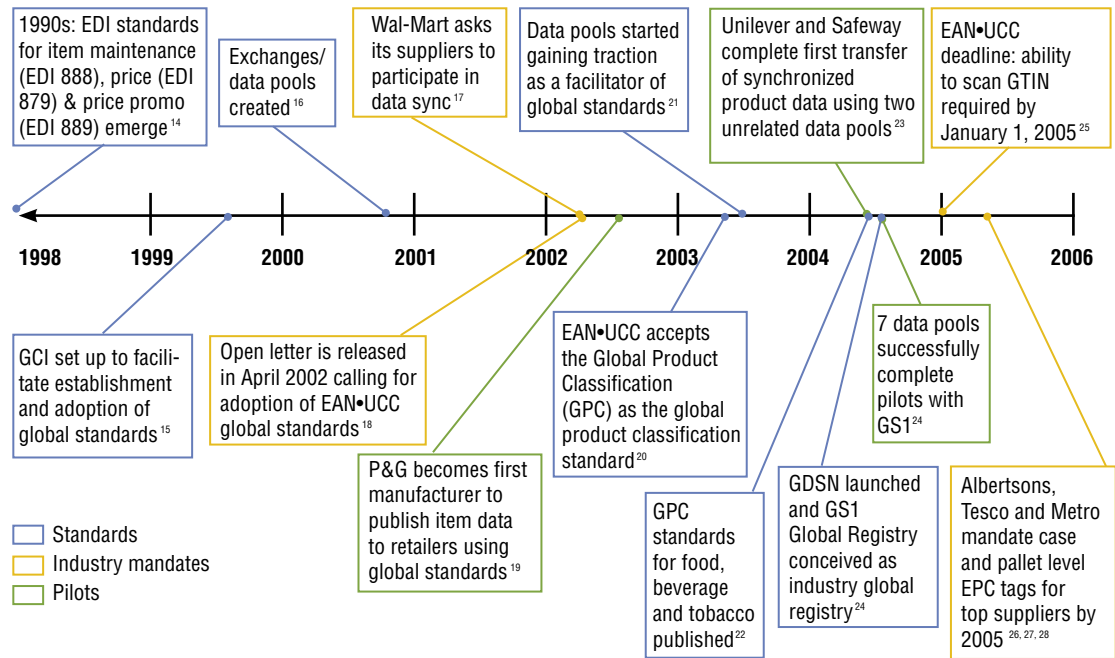
“Within five years I expect the majority of major retailers will have adopted and implemented a data synchronization strategy. This is such an obvious piece of low-hanging fruit for retailers and suppliers alike that it would be hard to imagine that the current momentum in the industry would not lead to wide-scale adoption greater than 80 percent of major retailers.”

— Steve Stone, SVP and CIO, Lowe's Companies<sup>13</sup>

For instance, only 16 percent of sales worldwide are conducted with synchronized master data between trading partners via standards compliant data pools.<sup>9</sup> And only 19 percent of GTINs are consistent with Global Product Classification (GPC) standards.<sup>10</sup>

Several retailers are pushing the GDS vision forward by issuing mandates. For example, Albertsons set a deadline of January 2004 for their suppliers to submit product information electronically.<sup>11</sup> In August 2004, Kroger set a deadline of April 2005 for supplier compliance with its new-item and data synchronization program. By expanding its scope beyond data synchronization to include elimination of the paper “new item” form, Kroger is pushing its suppliers to launch new products faster and reduce salesforce administrative time spent on item setup and maintenance.<sup>12</sup> As initiatives such as these are extended, standards will continue to evolve and GDS will expand accordingly.

**Figure 2. Global data standards and synchronization timeline.**



## Product information management: Enabling enterprise data management

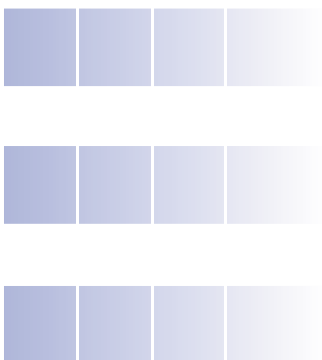
There is a host of complex product data elements – attributes, classification, partner data and hierarchy – that trading partners need to share with each other (see Figure 3). Data sharing is tricky. For example, a typical manufacturer may require 20 attributes to manage a product internally, but its retail partners could each require 40 item attributes when selling that same product. Complicating matters further, many of these attributes could vary by market and by retailer and continuously change over time.

**Figure 3. Types of product data.**

Attributes	Classification	Partner data	Hierarchy
<ul style="list-style-type: none"> <li>• Core: Basic information that is core to a product's definition (e.g., GTIN, brand)</li> <li>• Market-specific: Item data unique to the market in which the item is sold (e.g., pallet size)</li> <li>• Category-specific: Attributes unique to the item's product category (e.g., freshness date)</li> <li>• Relationship-specific: Information unique to the particular trade relationship (e.g., price)</li> <li>• Extended attributes: Additional data or content that helps to define a product (e.g., images)</li> </ul>	<ul style="list-style-type: none"> <li>• Global Product Classification (GPC) Schema: Provides a common language for category analyses; Will serve as a common link between trading partners with varying internal product classification hierarchy and schemas.</li> </ul>	<ul style="list-style-type: none"> <li>• GLN (Global Location Number): Organization entity identifier (ship to, ship from, bill to, remit to, customer number, vendor number, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Each: The lowest level of an item hierarchy intended or labeled for individual retail sale</li> <li>• Pack/Inner: A logistical unit between case and each</li> <li>• Case/Carton: A standard shipping unit level; It may be contained in a display or over-pack and may contain children (pack, each) in a single instance</li> <li>• Display: A standard shipping unit level; It may be a shipper, mixed carton/case or over-sized case/carton; It may have children (case, each) in multiple instances</li> <li>• Pallet: A standard shipping unit level containing displays or case/cartons</li> </ul>

Source: IBM Business Consulting Services.

A product information management solution plays a critical role in this complex data sharing process, acting as an internal normalization agent to cleanse and validate data according to company-established requirements. For suppliers, the benefits include aggregation of item, partner, location and price information from various back-end systems to create a holistic and consistent view of a product before sending data to trading partners directly or through third parties. Retailers benefit from a product management solution because it aggregates and “sorts” item, partner, location, price and promotion data from external and internal sources so information can be used for commercial and promotional activities.



**Product information management:** An enterprise data management solution that manages the company's comprehensive reference/master information, including product, partner, organization, location and relationship-dependent data, such as price and promotion, as well as the business processes associated with creating, managing and synchronizing this information internally and externally.

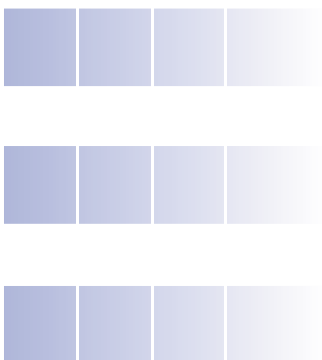
### *Data pools and GS1: Realizing the GDS vision*

Companies need to maintain the flexibility to synchronize data in a variety of ways to conduct business with multiple trading partners, depending on specific partner relationships. The GDS vision is designed to respond to this need and provide companies with substantial benefits. With the help of a data pool, data will conform to global standards and data synchronization efforts among partners worldwide will be more scalable. With the GS1 Global Registry, core information such as the Global Trade Item Number (GTIN) is registered once, at one place, for access by data pools.

#### **The GS1 Global Registry uses the following principles:**

- The GS1 Global Registry and data pools will be EAN•UCC certified.
- There is interoperability among all data pools and the GS1 Global Registry.
- Companies will have the ability to work with multiple, interoperable data pools which can register with and subscribe to the GS1 Global Registry.
- Only GDS EAN•UCC business messages will be used within the network.
- The product information management system is the gateway that will send messages to or receive messages from the data pools.

Data pools are a node on the GDSN, serving as an access point to the GS1 Global Registry, registering products with the registry, moving information between trading partners and interoperating with other data pools. As of December 2004, there are eight data pools which have conducted pilots with the GS1 Global Registry and are interoperable with each other (see Figure 4). As GDS moves forward, this number will grow, as more data pools develop capabilities to register information with GS1 and interoperate with each other. While trading partners can share data in other ways, such as “one-to-one” messages through EDI, data pools offer the most efficient, thorough and accurate means of “many-to-many” data synchronization. Even as global standards continue to evolve, by electronically synchronizing data in a consistent manner through the GS1 Global Registry and data pools, industry players can have confidence that their data is reliable.



### Evolving data pool services

- Offer interoperability with other data pools in synchronizing product information among trading partners
- Provide data quality services such as data cleansing and normalization
- Offer item synchronization engine and services
- Host multiple trading partner portals
- Provide application services, such as CPFR

**Figure 4. Interoperability amongst GS1 Global Registry and data pools.**

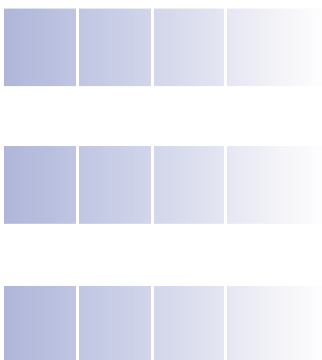


Source: "Global Data Synchronization Network Begins Operation." EAN International and Uniform Code Council. August 5, 2004. [http://www.fmi.org/supply/EANUCC\\_GDSN\\_PressRelease\\_20040805.pdf](http://www.fmi.org/supply/EANUCC_GDSN_PressRelease_20040805.pdf); "SINFOS successful in Beta-Testing for Global Data Synchronization Network." SINFOS. August 31, 2004. [http://www.sinfos.de/SINFOSEN/pdf\\_sinfos/PI\\_GDSNbetatest\\_SINFOS\\_engl\\_040831.pdf](http://www.sinfos.de/SINFOSEN/pdf_sinfos/PI_GDSNbetatest_SINFOS_engl_040831.pdf).

### ***GDS can yield substantial business benefits***

The projected benefits from data synchronization are substantial but, in reality, will vary from company to company. Too many firms have become stuck in trying to justify investment in Global Data Synchronization based on its direct ROI alone...but it is increasingly becoming a competitive necessity, as well as a foundation for a wide range of strategic initiatives.

Significant savings from GDS can be realized for field and back office functions, including labor savings and fewer post-audit charge-backs. More substantial benefits – lower invoice deductions and faster time-to-market – arrive when synchronization encompasses market, category and relationship-specific data, such as pricing. Ultimately, the greatest rewards come through the enablement of advanced

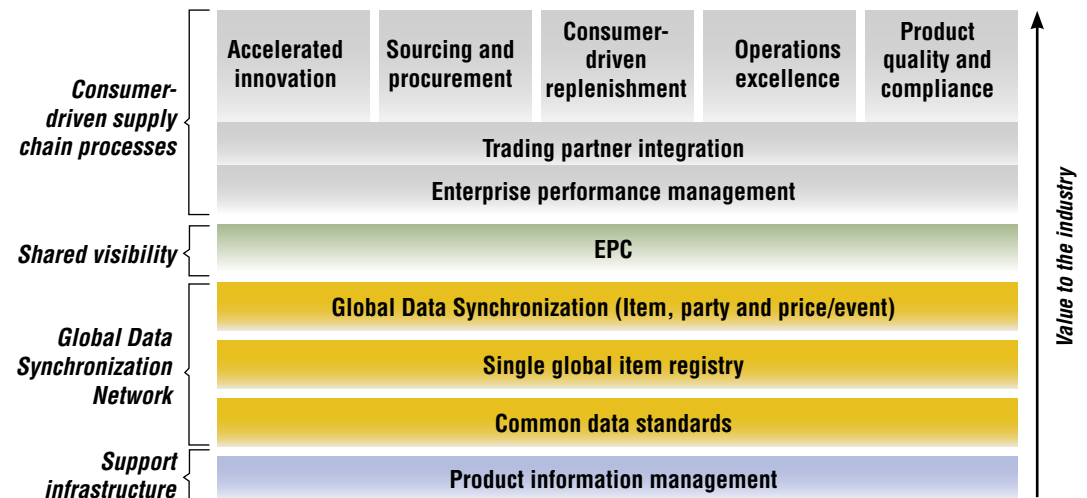


“It’s going to sound melodramatic, but [data synchronization] really is a long-term issue of survival. It’s either favorable adaptation or expulsion.”

– Bill Grize, President and CEO, Ahold USA<sup>29</sup>

collaborative initiatives (see Figure 5). Companies typically reap greater financial returns as they expand the scope of data synchronization and collaboration, and leverage synchronized information in initiatives such as EPC, CPFR, collaborative demand management and new product introduction. The success of GDS in eliminating inefficiencies and creating benefits through collaborative activities depends upon a cooperative effort – when companies take a comprehensive approach to enterprise data management and GDS with *all* trading partners.

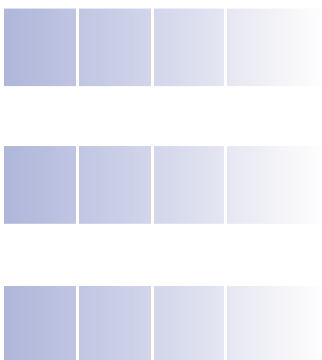
Figure 5. Driving value through data standards and synchronization.



Source: IBM Institute for Business Value.

### Prescription for success: The blueprint

Industry players are just beginning to understand the full impact of enterprise data management and the GDS vision. As companies move forward, they must take a pragmatic approach. Many companies are realizing only a portion of the potential value of the overall GDS vision, declaring victory without realizing the full benefits of the synchronization process or the activities it enables. Manufacturers, retailers and distributors need to build an infrastructure that supports *flexibility* and *reusability*, enabling them to realize a full range of benefits with multiple trading partners, regardless of the capabilities and systems they have in place.



We recommend a practical, six-step blueprint, based on extensive experience with retailers, manufacturers and distributors that can help you instill flexibility into your approach to enterprise data management and GDS:

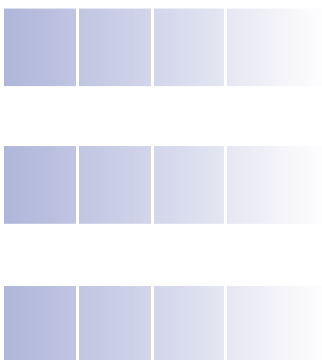
- 1) Define a data management strategy that includes enterprise data management objectives, priorities and owners.
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- 5) Define how the enterprise will measure benefits from its enterprise data management infrastructure and GDS, comparing “as is” to “to be” processes.
- 6) Assess how this new source of globally synchronized information can be used to enable additional internal and cross-trading partner value-creating collaborative initiatives.

### **Step 1: Start with a data management strategy**

Without a clearly defined strategy, companies typically respond to the need for data synchronization in a reactionary mode, staffing up armies of people to address numerous mandates and tasks, building in redundancy and processes that cost them money and, possibly, creating animosity among trading partners.

A well-defined enterprise data management strategy enables the seamless alignment of data externally and internally and leads to a single source of product information; any time the source changes, *all* data instances are automatically updated. All processes associated with the lifecycle of product information – from creating new products to end-of-life – are well understood, documented and centrally enforced. To elaborate, such a strategy:

- Allows communication of product information from its original source location to other destinations within and outside the enterprise in a seamless and paperless fashion
- Facilitates a perfect, consistent match of data between owner/originator of product data and all users of that data
- Provides a single source of comprehensive product, service, location, organization, price and promotion information
- Enables consistent business processes and workflow in support of creating, managing, synchronizing and retiring product information.





A comprehensive and flexible enterprise data management strategy involves three components – defining the data management organization, defining data processes and defining infrastructure integration and execution.

*Define your data management organization*

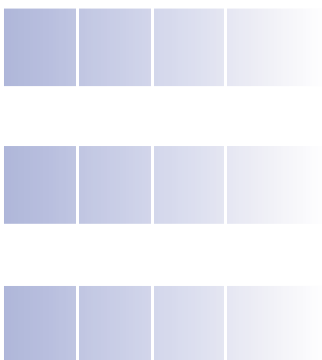
First, to begin designing your strategy, evaluate and assess the people, processes and technology in your organization. Define organizational responsibilities for data management and identify a respected executive to oversee the new organization with a charter of defining an enterprise data management execution approach and process. The definition process should include:

- Understanding the status of your key trading partners' GDS initiatives, possibly through the organization of a trading partner conference
- Understanding relevant industry standards, product information management and data pool requirements
- Determining how to make your solution pilot or production-ready
- Identifying the internal and external resources needed to execute the initiative
- Building your data management organization and setting key achievement milestones.

Second, define your partner relationship process and determine your approach to partner mandates. For example, how will your approach vary by trading partner? For manufacturers and distributors, determine how you will respond to trading partner mandates. For retailers, define a clear strategy for enterprise data management and GDS, focusing on creating value for both yourself and your trading partners. A lack of planning becomes an emergency for all involved.

Third, view product information as an asset rather than content. Ascertain the implications associated with product information being a business asset and weigh the cost of bad data to the enterprise. Then, define metrics to address expenses and the revenue impact of bad data.

Finally, define how your company will participate in industry activities and bodies, such as GS1, GCI and GSMP, and collaborate with other users of product information management software through user groups and advocacy meetings. Appoint organizational resources who can represent and communicate your business needs to industry standards bodies, as well as communicate "lessons learned" back to your enterprise. It is critical that your representation and participation in industry organizations and standards bodies be mutually beneficial, enabling you to bring your organizational requirements to an industry forum and take learnings back to your own company.



### *Define your data and business processes for enterprise data management*

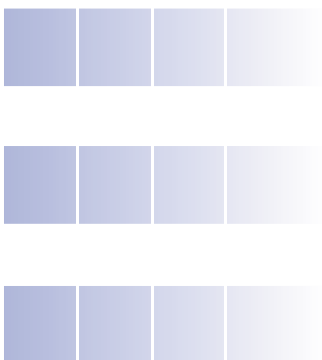
Data components and business processes are critical to defining how your enterprise data management solution will operate. When defining your data components, such as product attributes, classifications, partner/location data and hierarchy, think ahead, considering not only current requirements but also future business goals, such as the automation of a new item introduction process or a new product setup, or the needs of your e-commerce and EPC initiatives. Be ready to adjust your data definition process so that it can easily adapt to the evolving industry landscape.

Your data process definition should include a system integration strategy and system requirements that support your current and future business model. For example, plan for the automation of all systems interfaces, including factory, enterprise, financial, warehouse and point-of-sale systems. Determine whether to build or buy a GDS solution to connect to data pools. Specifically, remain current with evolving GDSN standards, as well as an individual data pool's implementation of those standards, including message choreography, required approvals, notifications, registry catalog items (RCI), catalog item notification (CIN), initial load, new, change/correct, discontinued, withdrawal and other required processes. Do not underestimate the cost of maintaining currency with the rapidly evolving world of the GDSN standards and data pool implementation of these standards.

Finally, define an ongoing data synchronization management and maintenance plan as part of your enterprise data management strategy to maintain the integrity of your data, processes and workflow both internally and externally.

### *Define your infrastructure integration and execution*

Next, plan the execution of your enterprise data management solution using a flexible solution architecture and design that will assimilate evolving industry standards and serve as a single source of product information within the enterprise. A well-defined enterprise data management strategy is designed to enable the flawless alignment of data internally and externally using automated process choreography. A solid strategy will revolve around a robust middleware and workflow solution designed to support employee portals, trading partner portals and the GDS vision. This "layered" architecture is extremely important to have a solution which is flexible and extensible. It will need to evolve, expand and improve as standards change, adoption increases, technology improves and volume grows. One of the key criteria of a solid solution is that it can change and scale without breakage or rework.



## Step 2: Assess the state of data in your enterprise

Conduct a thorough assessment of all data in your company. The assessment should uncover how data is sourced within the enterprise. Many companies store different versions of product information in multiple locations and systems. An average manufacture has many ERP, e-commerce, logistics, factory and marketing systems, including home-grown and commercial software from multiple vendors, each carrying different versions, subsets and formats of product information. For a retailer, product information residing in the merchandising, purchasing, POS, financial and warehouse management systems is usually different as well. Not having a consistent view of data may impact a company's ability to market appropriately or address customer needs.

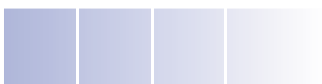
Your internal data assessment should not only highlight discrepancies in data across enterprise systems, but also reveal your enterprise's ability to adapt and comply with changing industry standards and business processes. Knowing whether product information is in a state where it can be synchronized automatically with required attributes should help your company make solution design decisions. It is important to understand the readiness of your enterprise to share data with business partners and data pools and to meet industry standards requirements.

Assessment findings will dictate your data requirements...and how these requirements are defined is critical to developing an effective solution for responding to GDS. Without explicit requirements, any solution will be hard-pressed to conform to desired objectives.

### Data assessment questions

- Is data sourced across multiple systems?
- Are flexible views of complete business data available?
- Are enterprise systems industry standards compliant?
- Are attributes required by enterprise systems, business partners, data pools and industry standards available?
- Are enterprise systems able to share or receive complete and accurate data with partners and other interested parties?
- Are up-to-date metrics used for item, price, location and partner?
- Is the new item introduction process automated and efficient?

*Source: IBM Business Consulting Services.*



### Step 3: Implement a product information management solution

A product information management solution is a requisite foundation for both building successful enterprise data management and complying with GDS and EPC initiatives. With a product information management solution, you can enter product data into an originating system only once, with all subsequent communication of that information managed electronically, eliminating the need for manual rekeying.

The product information management solution also aggregates data from multiple geographic and organizational databases into an internal master catalog. Information can then be “cleansed” and standardized, helping to eliminate data errors and make it ready for use by trading partners and internal applications. For example, a product information management solution can match an enterprise’s internal classification schema to the industry classification schema, validating all mandatory fields.

In addition, industry-standard validation processes are built into the solution so all processes are performed in one place rather than scattered across the enterprise. When rules change, individual applications, such as enterprise resource planning (ERP), customer relationship management (CRM) and supply chain management (SCM), do not require built-in logic for conversions – the product information management solution provides the flexibility to process all conversions.

#### Selecting a product information management solution: Does it offer a wide range of functionality?

<b>Link products to customer locations</b>	<ul style="list-style-type: none"><li>• Uses the GTIN structure to link to Global Location Numbers (GLN)</li><li>• Allows users to create customer-specific product lists</li><li>• Incorporates price bracket assignment capability</li></ul>
<b>Field customization and data normalization</b>	<ul style="list-style-type: none"><li>• Flexibility to easily and quickly add customer-specific data elements to the form</li><li>• Allows user input of collaborative information (i.e., suggested retail price, promotions)</li><li>• Normalizes data to match internally defined standards using set normalization rules</li></ul>
<b>Controlled access to data</b>	<ul style="list-style-type: none"><li>• Defines roles to determine the ability to edit certain fields and formats (descriptions vs. price)</li><li>• Allows for security level access grants</li></ul>
<b>Hierarchy conversions</b>	<ul style="list-style-type: none"><li>• Converts internally defined category hierarchy to industry recognized standard [i.e., Global Product Classification Schema (GPC)]</li><li>• Allows for product relationship management by pallet, display, case/carton, pack/inner and each</li></ul>
<b>Communications in customers standard</b>	<ul style="list-style-type: none"><li>• Assigns customer-specific link to the message standard for the data transmission (i.e., XML, EDI, AS2)</li></ul>
<b>Manage messages and notifications</b>	<ul style="list-style-type: none"><li>• Determines who receives the notification for certain data or registry messages</li><li>• Determines how person is to be notified (e-mail, pager, phone)</li><li>• Enables workflow management</li></ul>
<b>Multichannel management</b>	<ul style="list-style-type: none"><li>• View customers across regions, exchanges, channels of trade as needed by the users</li><li>• Differentiates the transmission format and translates to the assigned channel</li></ul>
<b>Maintain internal system of record</b>	<ul style="list-style-type: none"><li>• Verifies certification requirements are maintained for registry compliance</li><li>• Keeps the original data source intact</li><li>• Becomes the single source of record for external customer transactions, transmission</li></ul>

Source: IBM Business Consulting Services.

#### Step 4: Demand data pool interoperability

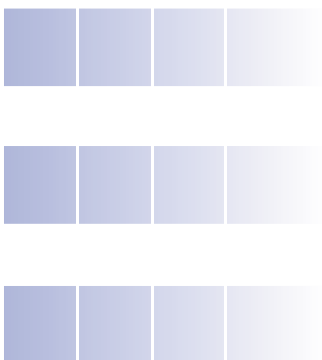
A data pool is central to the GDS vision, facilitating data exchange between trading partners within and across country borders. While a number of data pools exist in the market, both country-specific and global, the nature of worldwide commerce requires companies, using separate data pools, to work with each other. Thus, data pool interoperability is essential. When selecting a data pool, choose one that interoperates with other data pools and can register information with the GS1 Global Registry, relying on GDS standards. Look beyond connectivity to GS1 alone to optimize trading partner connectivity.

##### Questions to consider when selecting a data pool include:

- Is the technical data architecture sound?
- Does the data transported between the data pool, other data pools and GS1 meet industry standards and directions?
- Are security requirements met?
- Do value-add services meet specific company needs, such as catalog services, EDI and portal hosting?
- Does the message choreography methodology meet industry standards and directions?
- Is this data pool interoperable with other data pools?
- Are *all* attributes interoperable with other data pools or only a subset of attributes?
- Does the data pool support location-, party- and relationship-dependent data synchronization?
- Can the data pool articulate the linkage between GDS and EPC and provide a path to achieve that link?
- Does the data pool have adequate funding and will it be sustainable?
- Does the data pool have a vision for growing its customer bases to reduce subscription costs and make it ubiquitous?

##### Making the costs of the GDSN affordable

Currently, companies pay subscription fees to both data pools and the GS1 Global Registry. The dual cost companies are experiencing is slowing the adoption of the GS1 registry, calling for an evolution. Companies should consider promoting the adoption of a standard pricing model for the industry, in which users pay a subscription fee to data pools and the data pool charges a small fee whenever an item is published, updated or searched on the GS1 registry. This type of model would encourage interoperability among data pools and GS1 and lead to data pool differentiation based on value-added services.



### Step 5: Measure benefits from enterprise data management and GDS

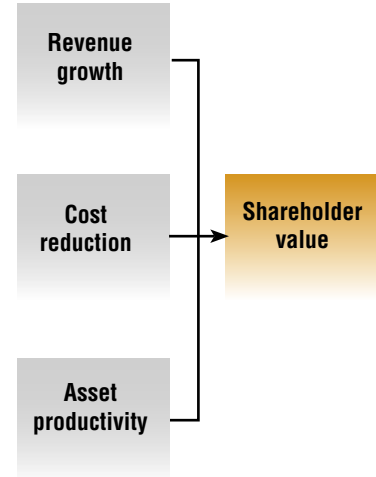
To determine if you are realizing the full value and benefits of GDS, your enterprise needs to develop and set up metrics and benchmarks. These metrics should be tracked on an ongoing basis to measure the effectiveness of your enterprise data management and data synchronization solution with a view toward continuous improvement. Potential measurements include:

- Percentage of out-of-stocks
- Time-to-market for new products
- Ease of tracking of price changes and promotional activity
- Number of invoice discrepancies
- Number of invoice deductions
- Number of product information updates and changes.

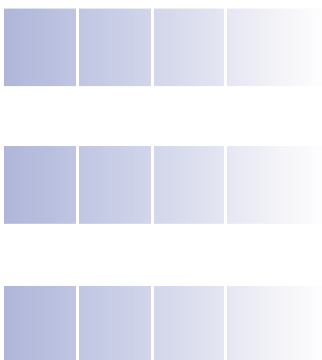
By carefully measuring the results from your enterprise data management and GDS initiatives, you can begin to quantify the return on investment. In each case, the benefits measured should be tied back directly to the initiatives to accurately depict the rewards to the company from improved data management. In the end, it is anticipated that a comprehensive and flexible approach to enterprise data management and GDS will directly contribute to shareholder value (see Figure 6).

**Figure 6. Creating shareholder value through enterprise data management and GDS.**

- Improved time-to-market for new products
- Reduced out-of-stocks due to improved order quality and invoice/purchase order matching
- Automation of new item introduction
- Reduced time spent collecting item information, communicating item information from supplier to retailer and rekeying information into retailer systems
- Reduced invoice/purchase order mismatching and deductions
- Elimination of data errors through the aggregation and cleansing of enterprise data
- Improved inventory management based on higher quality purchase orders and invoice/purchase order matching
- Improved category reporting capabilities
- Flexible, scalable foundation upon which future collaborative initiatives can be developed



Source: IBM Institute for Business Value.



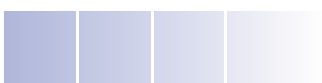
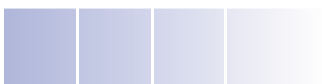
## Step 6: Drive additional internal and cross-trading partner initiatives through enterprise data management and GDS

Ultimately, standards, enterprise data management and GDS will be used to benefit other internal processes and scale collaborative initiatives, enhancing the benefits realized by trading partners. Internally, synchronized, standardized data can provide a common view of information across the enterprise, improving interdepartmental communication and supporting organizationwide employee portals. Externally, GDS should be used to build deeper trade relationships through new capabilities such as collaborative demand management, product lifecycle management and CPFR.

One of the most important initiatives GDS is linked to is EPCglobal, the network supporting industrywide implementation of the EPC. Although full implementation of GDS is not absolutely necessary to implement EPC capabilities, it should be recognized that expected benefits will not be achieved unless consistent, accurate and timely information is fully shared between trading partners. Companies should focus on building the foundation for both GDS and EPCglobal. Over time, it is likely that they will become one integrated network offering “low-hanging” benefits such as realtime inventory location, track and trace, product recall and reduced order errors. Trading partners should collaborate using standards-based approaches, adopt industry best practices and measure success by mutual business benefit.

“Panasonic understands the importance of global data synchronization and realizes that companies who do not pay close attention to accuracy and completeness of their product data now, are going to have a tough time collaborating electronically with their partners in the near future....”

– Director of Business Solutions, Panasonic Consumer Electronics Company



### Panasonic: Developing a flexible approach

Panasonic Consumer Electronics Company (PCEC) is a prime example of a company that addressed the challenges of data synchronization by developing a flexible approach. In 2004, responding to Wal-Mart's mandate for data synchronization compliance, the company took two steps to clearly define objectives and develop a comprehensive solution.

#### First step: Assessment

First, a cross-functional team, composed of members from PCEC, its parent company, Matsushita Electric Company, and Panasonic Management Information Technology (PMIT), assessed the state of its enterprise data, its enterprise data management infrastructure and the processes it used to align data internally and with its trading partners. As a result of this overall assessment, the company found several areas that needed improvement:

- Product data housed in the company's enterprise SAP system often lacked the necessary attribute fields to adequately describe the product.
- Product data often was being communicated to partners with missing attribute information.
- All required product information was often not available during item introduction.
- Product data within the SAP system was loosely controlled with no clear ownership in the organization.
- Product data integration within and across enterprise systems was not reliable.

### **Second step: Develop objectives and comprehensive solution**

Based on these findings, PCEC then developed clear-cut objectives for its data synchronization initiative:

- Create a solution to enhance product information management, creating a “common language” among Panasonic, Matsushita and other trading partners
- “Cleanse” data by product category and organize product categories using the UDEX product classification schema
- Develop new item introduction process using a systematic and human workflow
- Comply with Wal-Mart’s data synchronization mandate by year-end 2004.

To achieve these objectives, PCEC embarked on an aggressive data synchronization implementation effort led by the same cross-functional team. Within five months, PCEC was able to implement a fully-functional, production-ready data synchronization solution including a trading partner mandate response plan, an ongoing maintenance plan and a data cleansing process. To do this, it relied on the IBM WebSphere® Product Center and MQSeries® blended with Mercator’s middleware solution.

PCEC then created a product information process choreography to approve and validate “new,” “update” and “change” transactions using GDS industry standards. The company successfully piloted the electronic sharing of product information with Wal-Mart, using the UCCnet data pool and GS1 Global Registry.

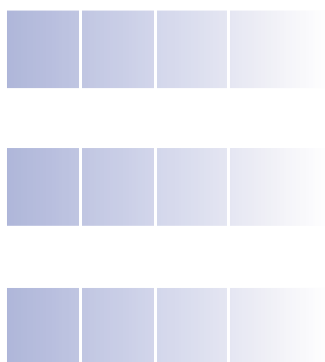
### **Reaping the benefits**

By creating a solution to improve the company’s product information management needs and enhance the accuracy of its product data, PCEC realized numerous benefits. It successfully met Wal-Mart’s data synchronization mandate, becoming the first consumer electronics company to do so, and set up a framework for a “common language” among PCEC, Matsushita, and its trading partners.

In doing so, PCEC eliminated errors in its product set-up process, eliminated manual processes and created one source of product information for the company. It expects to reduce purchase order and invoice inaccuracies at full implementation. Additionally, PCEC created a gatekeeping mechanism verifying that any errors in item information were promptly corrected and populated throughout the enterprise. The company also achieved an integrated infrastructure and workflow process, from both a technical and business perspective. Through its flexible approach to data synchronization, PCEC is in a prime position to scale its data synchronization capabilities with other retailers.

### ***The time for action is now***

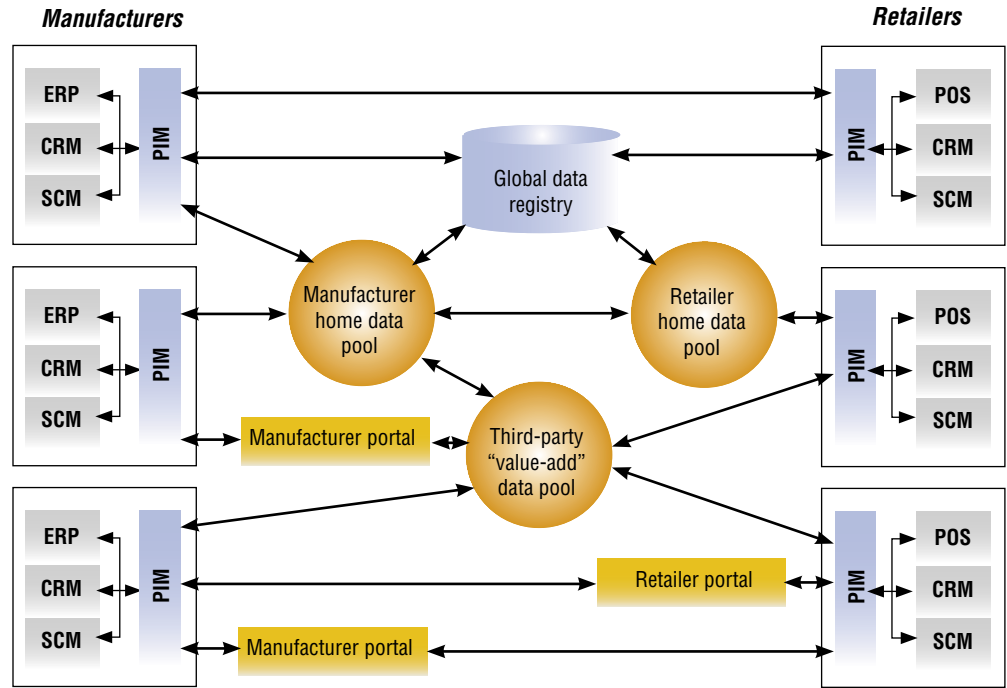
The adoption of the GDS vision is becoming an imperative. Many companies, including Wal-Mart, Carrefour and Unilever, are pushing for the development of GDS capabilities...others will soon follow. Increasingly, companies are approaching GDS and EPC in tandem. A combination of a product information management solution, a fully interoperable data pool and the GS1 global registry will enable companies to capitalize on the opportunities GDS and EPC afford and transform their data sharing processes using a standardized, synchronized approach. It is anticipated that this transformation eventually will extend throughout numerous joint processes, spurring increased value in such areas as product lifecycle management and collaborative demand management, as well as supply chain logistics. This transformation will also greatly benefit internal initiatives such as e-commerce.





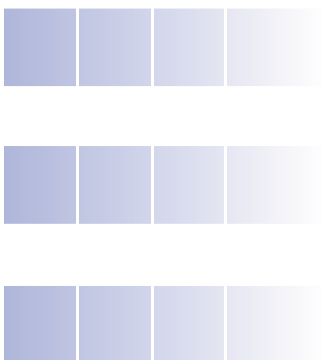
Flexibility is the key to how data synchronization will play out. A “one size fits all” solution is not appropriate, given unique partnership relationships and needs (see Figure 7). A flexible approach to data synchronization, relying on enterprise data management as a foundation, helps enable companies to adapt to evolving standards and put them at a competitive advantage. By actively participating in the shaping of evolving industry standards, companies can put themselves at an even greater advantage, influencing the development of future standards and initiatives to their benefit.

**Figure 7. Building a flexible approach to GDS.**



Source: IBM Business Consulting Services.

Experience from working with the country’s major manufacturers, retailers and distributors on complying with the GDS vision has revealed 10 key lessons that, in addition to the blueprint above, provide a path to follow that will optimize the GDS opportunity.



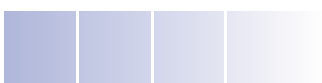
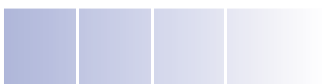
### Top ten lessons learned

1. Don't build what you can buy. This will save investment dollars in both the short-term and long-term.
2. Integrate your approach to data management. This will provide a single source of product, party and price information and eliminate one-off solutions.
3. View data as an asset. Understand the impact of bad data to your business and develop a data management strategy that makes data accuracy a priority.
4. Define detailed business and technical requirements. Success will be determined by how well your requirements are defined.
5. Don't focus solely on short-term ROI. The real justification is in the flexible infrastructure that will enable future collaborative activities. If implementation is viewed as a tactical "IT" initiative, it will fail. Business strategy must direct implementation with a long-term view.
6. Advocate a cross-functional mindset. Assign both business and technical owners to the project.
7. Don't try to fly solo. Use industry resources (e.g., EAN•UCC, GCI, GDSN, third-party service and solutions providers).
8. Measure what you expect to improve. Incorporate metrics and reports to measure progress.
9. Data synchronization is not an event. It is a process first, technology second. Understand all processes impacting data synchronization and incorporate an ongoing maintenance plan once the GDS solution is built.
10. Limit the scope. Spend a little and learn a lot. Use a phased implementation approach: design, build and execute.

The need for achieving a collaborative GDS vision is clear. Enterprise data management and GDS promise to eliminate inefficiencies and generate benefits in the data sharing process for manufacturers, retailers and distributors. Leading competitors are already strengthening their supply chain through a standards-based approach to sharing key item and price data with trading partners. Industry players now expect their partners to do the same and share clean, standards-based data electronically. There is no time to waste. By combining strategic focus with infrastructure flexibility, companies can position themselves to reap sustained business value from GDS in the future.

To discuss how your company can prepare for GDS, please contact us at [iibv@us.ibm.com](mailto:iibv@us.ibm.com). Or to explore other resources for business executives, you can visit our Web site:

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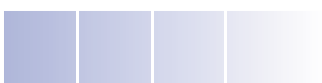
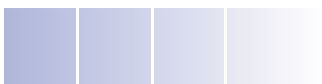
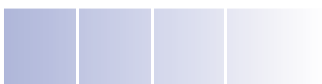
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