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Preparing for Global Data Synchronization with Product Information Management and Master Data Management

White Paper
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Chapter 1

Executive Summary

Relentless pressure on pricing and profits in the Consumer Packaged Goods (CPG) industry, including manufacturers, distributors, and retailers is driving all aspects of the supply chain to reduce inefficiencies wherever they can be found. Few problems have a more damaging impact on the bottom line—and customer satisfaction—than inconsistent and inaccurate product and price information passing between manufacturers, distributors, and retailers.

Inconsistent product information—pricing, physical data, packaging, and so on—results in additional costs and countless unmeasurable problems. Incorrect or outdated invoices and purchase orders result in transaction delays and lost sales. A widely reported study by A. T. Kearney found that more than \$40 billion is wasted each year due to invoicing errors, while the Grocery Manufacturers of America estimate the amount of waste is estimated \$25-50 billion¹. These errors are the direct result of inconsistent information shared across the supply chain. The loss includes not only direct costs such as chargebacks and invoicing errors, but also indirect costs. For example, incorrect product packaging information can result in transportation inefficiencies; manual intervention to correct automated processes requires additional staff and slows the speed of business.

To overcome these inefficiencies, the process of sharing product data between trading partners on a global basis must be standardized. In the last several years, the CPG industry, under the umbrella of the European Article Numbering-Uniform Code Council (EAN-UCC), developed global standards for describing, synchronizing, and communicating product item data. These standards describe how to implement data synchronization among trading partners, and provide the foundation for collaborative initiatives such as:

- Global Data Synchronization Network (GDSN), for aligning accurate and up-to-date product information between trading partners' transactional systems.
- Radio Frequency Identification (RFID), for accurate and detailed tracking of goods across the supply chain.
- Collaborative Planning, Forecasting, and Replenishment (CPFR), for tighter, more efficient processes that send goods to retail shelves and into customers' shopping carts.

These standards are more than exercises in information technology—implementation results in achieving business goals of lowering costs and improving sales:

- Johnson & Johnson decreased out-of-stocks by 2.5 percent with Wal-Mart by eliminating data integrity issues
- Procter & Gamble made improvements in purchase order accuracy, decreasing out-of-stock items from eight percent to three percent
- Gillette synchronized data in its product catalogues and databases, nearly eliminating order management issues²

Before any organization can reap the benefits from these collaborative initiatives, it must first implement a program of internal data synchronization. All of a company's internal systems must use the same, accurate product information before it is shared with outside trading partners.

¹ www.gmaabrand.com/news/docs/NewsRelease.cfm?docid=972

² Fact sheet, "About 1SYNC," www.transora.com/documents/aboutus/1SYNC/1SYNCfactsheet.pdf

Companies require a flexible, comprehensive solution that can adapt to the way they do business today, while providing a smooth migration path to the widespread adoption of these global standards. Today, many companies employ a mix of proprietary and standards-based processes in their trading environments, and any deployments must accommodate existing procedures. The Solaris™ Enterprise System platform — which includes the Solaris Operating System (OS), Sun Java™ Enterprise System, Sun N1™ life cycle management software, and more — provides a secure, robust, and affordable platform that is based on open standards and APIs at every layer.

Companies such as Enterworks and Sun have built application solutions that can address today's operating requirements while preparing for tomorrow's trading environments. It is clear that enabling trading partners to efficiently and securely exchange product information can provide maximum benefits.

For additional information, please contact your local Sun representative, or send an inquiry to: mdm-ext@sun.com.

Chapter 2

Introduction

Every year, businesses lose billions of dollars in sales from supply chain inefficiencies. Companies need solutions that let them provide exactly the right data and goods to the right customers, partners, and employees at exactly the right places and times. But enterprise applications—financial, inventory, warehouse-management, fulfillment, and other critical business systems—are often incompatible mixes of legacy systems and applications from multiple vendors. Such environments make synchronizing internal applications with suppliers’ and customers’ software a significant issue, one of the most costly and complex supply chain challenges that companies face.

Manufacturers, distributors, and retailers are dealing with enormous cost pressures, resulting in an industry-wide initiative to drive out waste and improve efficiencies wherever they can be identified. The A. T. Kearney study that found over \$40 billion is wasted each year due to invoicing errors is one indication of the depth of this problem. These errors are the direct result of inconsistent information shared across the supply chain, even though information sharing is central to the efficiency of the overall trading community. The sheer volume and scale of the environment contribute to the problem. With hundreds of millions of items and tens of thousands of partners, it is difficult, if not impossible, to ensure that there are no transaction errors. In fact, the current environment is prone to errors:

- One retailer reported up to 37 percent of its invoices were in error, due to incorrect pricing or item numbers.³
- One study found that 60 percent of all invoices generated had errors, with the cost to correct the errors ranging from \$40 to \$400 per incident.⁴ Similar numbers have been cited in virtually all CPG industries.
- Smart & Final reported that it found 47 different addresses for IBM and multiple spellings of Coca Cola, all in the same system.⁵
- 43 percent of all invoices result in some form of deduction.⁶

Beyond actual costs, out-of-date or incorrect product information adversely impacts other areas. For example, how many products are affected if a change is made to a carton specification? How long will it take to find out? How long will it take for that information to propagate through the supply chain? Until the new specification is incorporated in the traffic system, will trucks carry less than maximum loads?

Global data synchronization is the concept of sharing this data with trading partners, and covers global standards and related issues such as communication, security, protocols, and interfaces—enabling more process automation and reducing errors. However, before product data can be synchronized among local and global data pools, it must be of the highest quality—a single version of the truth.

At a very basic level, Product Information Management (PIM) is about quality and availability of product data—having a single version of the truth, and the ability to share it with partners. To fully optimize supply chain efficiency, enterprises must be able to verify product data and establish a master repository for it. Once that is accomplished, companies can share and synchronize product data with their local and global trading partners.

³ Randy Goldbeck, “Understanding UCCnet, Part I”, *Greenhouse Product News*, January 2005, Volume15, Number 1, Scranton Gillette Communications. www.gpnmag.com/popup_app/index.cfm?fuseaction=showArticle&appDirectory=gpn&articleID=5734&forPrint=yes

⁴ Tom Kevan, “Global data synchronization,” *Frontline Solutions*, Dec 1, 2003. www.frontlinetoday.com/frontline/article/articleDetail.jsp?id=77362

⁵ Carol Sliwa, “Out of Sync,” *Computerworld*, December 6, 2004. www.computerworld.com/industrytopics/manufacturing/story/0,10801,98019,00.html

⁶ Gurram Gopal and Eric McMillan, “Synchronization: A Cure for Bad Data,” *Supply Chain Management Review*, May 1, 2005. www.manufacturing.net/scm/article/CA608785.html

Before an enterprise can share data with its trading partners, however, the data must be clean and accurate from an internal perspective. Unclean or out-of-date data that enters the supply chain's information flow injects the potential to cause massive problems, both for the originating enterprise and partners who rely on the data. PIM applications enable companies to validate, store, and manage product information—descriptions, dimensions, images, prices, effective dates, and so on—using data management tools and centralized data repositories. PIM applications gather information that is scattered across back-office applications, assist in validating it, and maintain a central database of the information. Using PIM, you can create one repository for all product data, which enables you to centrally manage item information.

PIM applications form a subset of Master Data Management (MDM), which establishes a layer of “meta-data” (essentially data about data) to ensure that the PIM-centralized data is shared accurately with suppliers and customers. Only after the foundation of reliable, “single truth” product information is established through PIM can an enterprise establish MDM and be ready for global data synchronization. High quality data is a requirement for other initiatives, including RFID and collaborative forecasting, as well.

Though the CPG industry is just beginning to embrace GDS, many businesses are seeing the results of their investments in this area—the results are compelling. From a 2004 presentation⁷ by the Grocery Manufacturers Association, which presented the results of a case study on the benefits of GDS:

- Retailers enjoyed \$700,000 to \$1 million in savings for every \$1 billion in sales:
 - One-half to one-percent reduction in inventory
 - Two to four-percent reduction in out-of-stock conditions
 - Five to ten-percent reduction in finance time, reconciliation, and auditing fees
 - Two weeks faster time to market for new products
- Manufacturers enjoyed \$800,000 to \$1.2 million in savings for every \$1 billion in sales
 - More than one-percent reduction in logistics costs
 - More than five-percent reduction in customer service time when dealing with purchase orders
 - Thousands of hours saved in warehouses and deliveries
 - Two weeks faster time to market for new products
 - Five- to ten-percent reduction in finance time, reconciliation, and auditing fees

This paper provides a detailed look at the challenges, key concepts, and solutions utilized when preparing for GDS by first incorporating PIM and MDM mechanisms encompassing data accuracy, communication, security, protocols, and interfaces. Sun works with leading major application providers such as Enterworks to provide flexible MDM solutions and deliver the framework to collaborate accurately with trading partners through programs such as GDSN, RFID, and CPFR. The Solaris Enterprise System platform, which includes the Solaris OS, Java Enterprise System, N1 life cycle management software, and more, provides a simple, predictable, and affordable platform for managing product information and synchronizing data with global suppliers and customers.

⁷ GMI/FMI Trading Partner Alliance, “Action Plan to Accelerate Trading Partner Electronic Collaboration,” 2003. www.fmi.org/supply/data_synchronization.pdf

Chapter 3

Supply Chain Challenges—Sharing Data

Problems related to product data extend far into enterprise operations. Out-of-sync product information can be the cause of reduced efficiency and productivity, increased loads on finance and warehouse resources, lower shipping capacity, longer time-to-market for new products, and higher logistics costs.

Establishing electronic connections between partners in a trading community does not solve the problem—many challenges remain.

Internal Issues

Most companies have internal issues with their product data. It is often inconsistent and spread across multiple systems and processes. Product data must be rationalized, cleansed, and updated into a single version of the truth. There are many road blocks to establishing corporate data integrity and creating a master record that can be shared externally.

Multiple Data Repositories

Most businesses operate with multiple enterprise applications. These may be internally developed, off-the-shelf implementations, or fully customized deployments. Comprehensive product information may be spread across multiple applications in various departments—marketing, sales, engineering, finance, manufacturing, and others. The typical Fortune 1000 company, for example, deploys an average of 48 applications and 14 databases⁸. Values may not be consistent across all of the applications. Processes and data are often poorly aligned and not well interconnected, if at all. As a result, product data becomes stale. The problem is magnified up and down the supply chain.

Data Gaps

Companies across the supply chain often communicate just the information required for a specific transaction. Product information in the supply line can rely on ad hoc processes. Retailers, distributors, and manufacturers rarely deal with each other in a consistent manner. This results in one-off methods to support many different entities. Faxes, paper-based forms, and human knowledge too often supplement electronic information. Product information is often rekeyed at multiple steps, injecting and propagating additional errors.

Product information refers to more than the information that is contained in a typical manufacturing system (SKU, item number, price, description, size, and so on). Extended information may be required, often varying according to country, state, and local regulations. Examples include safe handling instructions (such as battery disposability), environmental instructions (such as temperature, expiration date, or recyclability), and even marketing benefits (“sugar-free!”). In addition, data may be valid only for a specific period of time. Enterprise resource planning (ERP) applications are designed to deal with a subset of the product information required to enable transaction processing. In an expanding global trade environment, pricing and physical attributes must be recorded and transmitted in localized units. These factors and more can create gaps in product information.

⁸ Emily Kay, “Coordinating Supply Chain Data,” *Frontline Solutions*, May 1, 2003. www.frontlinetoday.com/frontline/article/articleDetail.jsp?id=55444

Data Cleansing

Essential to the process of global data synchronization is utilizing clean data, both internally and externally. This requires finding and verifying errors, aligning information across all subsystems, and keeping them clean beyond the initial effort.

- **Validation:** Information must be checked across all systems and processes, and corrections made where applicable. For example, incorrect information could have been entered by miskeying the original entry.
- **Synchronization:** Product information must be aligned across all ERP applications. For example, pricing in the Electronic Data Interchange (EDI) and marketing part number database may be different, or serial numbers may not reflect the latest revision in one of these locations. In addition, processes must be improved to maintain data synchronization. Paper forms should be retired, and human intervention minimized.

Data cleansing should address the following:

- Identifying data sources for all attributes across various systems of record (ERP, marketing, EDI, and so on).
- Revising the data to ensure it complies with internal and external data standards and requirements.
- Including new attributes appropriate for comprehensive product information. This step is made far easier—free from the need to involve IT resources—with an MDM solution in place, because it enables quick creation and modification of attributes through an easy-to-use interface.
- Establishing business and system policies to keep data clean and internally synchronized between various internal systems.

Business Process Automation

After clearing the data cleansing hurdle, a company must ensure that subsequent data changes are immediately propagated throughout the enterprise. Moreover, many internal stakeholders may need notification when certain data changes are made, and other business processes (approvals, supplier/customer notifications, pricing updates, and so on) may need to be kicked off when data changes occur. The business process automation function of an enterprise PIM system addresses these needs by capturing and automating the best business practices of the enterprise to ensure data currency and the smooth flow of key business processes.

Different Requirements for Data Consumption

Even when product data is clean and synchronized, the issue of what should be shared arises. Internal product information requirements are almost always a superset of external requirements. For example, cost information needed for internal tracking and analysis is not typically made available to all external partners—this information needs to be identified and protected.

Enterprise trading partners may have specific requirements. Many supply chain operations have developed their own product information standards, and require conformance among trading partners. In trading communities where multiple organizations have their own requirements, determining which data to share and track becomes more challenging. Systems have varying amounts of tolerance for extra data or data gaps.

A core problem in sharing data among individual operations in a supply chain is that of definitions. It is very difficult to agree on the meaning of terms such as purchase order and shipping notification, and what fields (and in what order) are contained in them.

An unfortunate reality is that companies are unlikely to agree on common data definitions. Common definitions change, and no two enterprises will adapt to those changes at the same instant. Most companies have at least some proprietary systems in place, and even small changes can take time and resources that many companies are unwilling to expend. In addition, most enterprises have at least some subset of proprietary attributes that they want to track without exposing them outside the enterprise.

This is where the value of MDM becomes readily apparent, making the lack of common data definitions an irrelevant issue. By using MDM, an enterprise can ensure that different definitions apply to the same products and attributes.

Data Ownership and Security

Product and service attribute information is by its very nature confidential information that belongs to the supplier's trading partner, intended only for the confidential use of customers. Security was less of an issue when communication was over dedicated lease lines (value-added networks, or VANs). But now, trading communities use the Internet, driven by cost and ubiquity. The free exchange of information among trading partners requires rigorous data security and authentication technologies.

Who owns the data, and what can be done with it, is a significant hurdle to supply chain integration efficiencies. Many companies are hesitant to share sensitive and potentially competitive information with their supply chain partners. How information is protected while traveling over public networks is a real concern. Users want to know:

- Is message privacy ensured? Is the message encrypted so that only the intended recipient can open it?
- Is the message legitimate? What measures are in place to ensure that the message was sent by a legitimate user or process, and has not been changed or opened en route?
- Are Internet gateways secure? Is the enterprise network protected from external snooping or attacks at the point where it connects to the Internet?
- How will the information be used by the trading partner? Does it have a right to share this information with its partners and suppliers?

A corporate security policy should be extended to consider data shared with partners, including how it is used. When transmitting data, it is strongly recommended that confidential information be communicated in a secure fashion when using the Internet, similar to UCCnet's Applicability Statement 2 (AS2) communication requirements.

Multiple File Types and Transmission Protocols

Proprietary trading systems have implemented multiple protocols and file formats, which may or may not conform to emerging global standards. These can include AS1 (Simple Mail Transfer Protocol or SMTP), AS2, (HTTP Secure or HTTPS), AS3 (File Transfer Protocol or FTP), Electronic Business Extensible Markup Language (ebXML), other network-based protocols, and Web Services. Internal systems and specific partners may still rely on certain protocols, so any solution will need to accommodate them.

Industry Data Pools

Independent data pools—repositories of standardized product information that can be shared among member organizations—have emerged over the past few years. For example, Worldwide Retail Exchange (WWRE) and GlobalNetXchange

(GNX) were formed—and have since merged—to create online communities where suppliers, distributors, and retailers could synchronize product data. 1SYNC, which was formed by the merger of Transora and UCCnet, is another example of a regional data pool.

Although data pools improve synchronization between member partners, regional pools each have different data standards, and those standards also vary from one country to another, adding even more complexity to global trading. MDM is the ideal solution that easily configures attributes for any number of data pool and other third party-specific standards, while continuing to manage data under internally designated standards and definitions.

The GDSN and associated data pools were not designed to replace EDI. They were developed to take advantage of new and emerging technologies that allow all industry trading partners to engage in global data synchronization. In addition, these pools do not address commerce messages such as orders, dispatch advices, and so on. The GDSN enables trading partners to exchange product information that is accurate, up-to-date, and compliant with globally supported, EAN-UCC system standards, eliminating the high costs associated with inaccurate data.

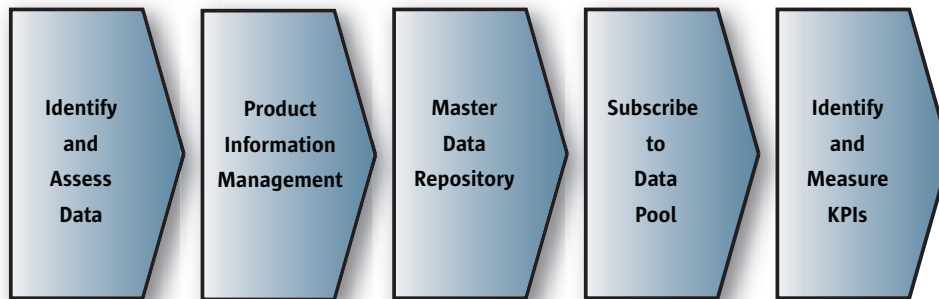


Figure 1: Steps to global data synchronization

Moving Forward with GDSN

The global data synchronization vision is enabled by the GDSN, a federation of certified, interoperable data pools, global registry, and EAN-UCC standards. Global data synchronization is already delivering significant savings and efficiencies in the supply chain. Companies that want to enjoy these benefits should consider following these steps:

- Get internal data in order. Create a clean data repository—the master data repository—that serves all functions, including operations, marketing, and others as needed. Perform initial and ongoing data validation to make sure the information is correct and up to date. A PIM application serves this function.
- Develop and refine a model for internal data management processes. The business process automation function with an enterprise PIM application ensures that best business practices are captured and automated.
- Cross-reference product data attributes with trading partners and data pools. This can be accomplished using an enterprise Master Data Management application.
- Identify and assess data that needs to be tracked for both internal and external consumption. Define a data management strategy that identifies objectives, owners, and priorities.
- Select a data pool that is compliant with EAN-UCC standards and interoperable with the GS1 GLOBALregistry.
- Identify and measure key performance indicators (KPIs) to assess and track improvements.

Sun is working with Enterworks, a leading PIM and MDM solution vendor that provides a comprehensive set of applications and services for a complete data synchronization solution. Using Sun Enterprise™ server and Java Enterprise System software, these applications are designed to create a flexible environment that conforms to worldwide standards, while enabling interoperability with proprietary and one-off systems and technologies.

Chapter 4

Sun and Collaborative e-Commerce

Businesses often have many of the components and systems needed to manage and integrate product data; the challenge is to leverage existing resources to enable collaboration with the extended trading community. Sun offers the products, partnerships, and services to build on existing enterprise capabilities, enabling them to keep mission-critical data synchronized via the Internet at all times. In addition, Sun is a thought leader on business-to-business (B2B) standards and implementation, driving and contributing standards that address significant challenges in this area.

Java Enterprise System

The Java Enterprise System provides the software foundation for global data integration. Built using Internet standards and open application programming interfaces (APIs), it delivers the proven reliability, scalability, and integration capabilities required for industry-wide, collaborative initiatives. The Java Enterprise System software provides integrated middleware infrastructure needed for GDS, including enterprise-grade products such as the Java System Directory Server, Java System Messaging Server, Java System Application Server, Java System Web Server, and others. Designed and built with open industry standards, they form a core set of integrated IT services, including:

- Web and application
- Network identity
- Portal
- Communication and collaboration
- Availability
- Security
- Integration (based on the Sun SeeBeyond ICAN™ suite)

This integrated infrastructure runs on the proven, highly reliable, Solaris OS, which delivers industry-leading features such as containers to improve system utilization and rock-solid security to ensure privacy and stability.

The Java Enterprise System offers a single integrated, comprehensive software system with the cost, integratability, and reliability businesses require to deliver service level agreements to their customers. All of the components in the Java Enterprise System are successfully tested together before each release, enhancing quality and helping to ensure that each component behaves as it should during interactions with the others. The Java Enterprise System runs on SPARC™ and x86 platforms, under the Solaris and Linux operating systems.

Java Integration System

The Java Integration Suite is a fully integrated SOA-based platform delivering a rich set of integration and composite application capabilities, including Business Process Management (BPM), industry leading messaging, rich transformation, and a broad and deep array of connectors. The Java Integration Suite also features Business Activity Monitoring (BAM) for development of sophisticated dashboards and alerting, Extraction, Transformation and Loading (ETL) capabilities for moving bulk data, extensive B2B support and an advanced facility for enabling the development of a single master index for entities such as customer, patient, product or supplier.

As an integral component of the comprehensive Java Enterprise System, the Java Integration Suite can further extend the value proposition to include complementary suites providing industry leading identity management, functionality from the industry's first and most popular production Java 2 application platform, and standardization on an enterprise-wide portal for customers looking to lower their total cost of ownership by efficiently deploying applications and improving development productivity.

Containing Licensing Costs

Enterprise application licensing can be complicated. Many applications require supporting software components, such as databases and application servers, and typically everything is licensed on a per-processor basis. These costs increase linearly as companies need more servers and processors to support growth or new users. For example, licensing costs for competitive application servers—the core of many enterprise applications—can run into hundreds of thousands of dollars per company. The IT environment is further complicated due to the fact that each software vendor also has its own unique upgrade schedule and service-level agreement. And, each third-party software component requires different in-house resources.

Simplifying the software infrastructure and lowering costs is imperative to remaining competitive. Java Enterprise System software is offered at a straightforward, predictable price point for product suites, or the entire solution stack—all based on the number of internal users. For a single per-user fee, businesses receive unlimited access to all components of the Java Enterprise System or Java System Suites. And, by consolidating IT infrastructure under the Java Enterprise System umbrella, companies may also achieve unprecedented efficiency in software management and administration.

Easing Migration Efforts

The Java System Application Server is built on open standards, and features open APIs for maximum integration with other solution technologies. This includes databases, network and system management platforms, and Web services standards—in addition to all the functionality availability in the Java Enterprise System. This facilitates migration efforts, enabling existing systems and capabilities to integrate with new components—IT developers can approach one part of the application environment at a time. For example, Transora was able to migrate from a proprietary Web server environment to one using the Java System Application Server in just a few months, without impacting users⁹.

Companies can also benefit from increased flexibility in the area of application development. With proprietary-based solutions, changes or updates to any portion of the environment needed to be assigned to individuals with unique skill sets. However, with the Java Enterprise System integrated development environment, any developer in an organization can work on any project. This can have a tremendously positive impact on management of an applications development team. In addition, all the components of the Java Enterprise System are uniformly updated and maintained by Sun, making the overall IT environment more predictable.

Universal Business Language

Much of today's e-commerce is still transacted over old-fashioned, proprietary, and expensive EDI networks. Universal Business Language (UBL), a proposed Organization for the Advancement of Structured Information Standards (OASIS) specification for electronic commerce, presents the potential of enabling smaller businesses to engage in global commerce

⁹ "Simplifying Infrastructure Software with the Sun Java Enterprise System," Customer Success Story, Sun Microsystems, 2005. sun.com/software/customers/transora.xml

alongside major vendors. UBL defines a library of eXtensible Markup Language (XML)-based, electronic business documents for standardizing functions such as purchase orders and invoices. It plugs directly into existing traditional business, legal, and records management practices and eliminates the rekeying of data in existing fax- and paper-based supply chains. UBL is the basis for a simple kind of Web service — automating purchase orders and invoices.

Sun actively supports the UBL initiative — Jon Bosak, Sun's Distinguished Engineer, is chairman of the OASIS Technical Committee on UBL. Previously, Jon was one of the driving forces behind XML.

RFID

RFID technology, in conjunction with Electronic Product Code (EPC) technology, is enabling a global business network that tracks products across the entire supplier-to-consumer chain, helping businesses improve their asset visibility. RFID technology will allow companies to automatically monitor items anywhere throughout the supply chain in real time, and share information with trading partners. The creation of this asset management network can improve operational asset management efficiencies, secure the supply chain by reducing or eliminating product counterfeiting and tampering, and help guarantee compliance with government regulations. An essential requirement to effective RFID acceptance and implementation is that it must be associated with accurate product information.

Sun is a leader in RFID technology, and has helped many companies in their efforts to create an RFID infrastructure and meet RFID mandates. As chair of both the MIT Auto-ID Center's Technology Board and Software Action Group, Sun led industry efforts to drive RFID and EPC standards. As part of EPCglobal, Sun continues to participate and drive those efforts today. Sun is committed to delivering a standards-based infrastructure for deploying enterprise RFID applications. Further, by leveraging the Sun Solution Center, our customers can be confident that their RFID solutions will deliver real-time business requirements.

Platform Support

Sun offers compelling hardware solutions, including Sun Fire™ T1000 and T2000 CoolThreads™ Servers based on the revolutionary, ultra-fast UltraSPARC® T1 'rack-on-a-chip' processor. With up to eight cores per chip, four threads per core, and very low energy costs, these new servers can drive down operating costs associated with increased IT usage.

Sun's new AMD Opteron™-based servers are the fastest, most space-efficient, and most energy-efficient servers in their class. Sun Fire x4100 and x4200 servers are among the most energy-efficient x64 servers in their class, providing more than 52-percent power and cooling savings compared to competitors. Sun also offers Intel x86-based hardware solutions.

Together, these hardware solutions support virtually all major operating systems. This includes the Solaris OS for SPARC and x86 platforms, Microsoft Windows Server 2003 (Standard, Enterprise, and Web Editions), Red Hat Enterprise Linux, SUSE Linux Enterprise Server, and VMware ESX Server. In addition, Sun Secure Global Desktop Software (formerly Tarantella) provides secure access to server-based applications on Microsoft Windows, Solaris, Linux, HP-UX, and AIX operating systems as well as mainframe and midrange systems—there is a Sun platform ideal for nearly every situation.

Installation requirements vary widely, depending on actual load and the number of users. A good starting point for PIM and GDS is entry-level and x64 Sun servers, such as the Sun Fire X2100 Server.

Chapter 5 Preparing for GDS

Sun is working with Enterworks to provide a comprehensive set of applications and services that provide MDM—the prerequisite for successfully deploying global data synchronization capabilities. This solution set enables both internal data synchronization and business process automation through PIM, and external data synchronization through MDM for vendor and customer interaction.

Enterworks Product Information Manager (EPIM) is a comprehensive PIM solution for retailers, distributors, and large suppliers. A proven enterprise solution, EPIM aggregates product data from ERP, CRM, and other systems, validates and manages the information, and synchronizes it for internal stakeholders throughout the enterprise. From a base of accurate and current product information, EPIM helps manage all internal product information for enterprise-wide collaboration, faster time-to-market, and increased accuracy in everything from orders to invoices.

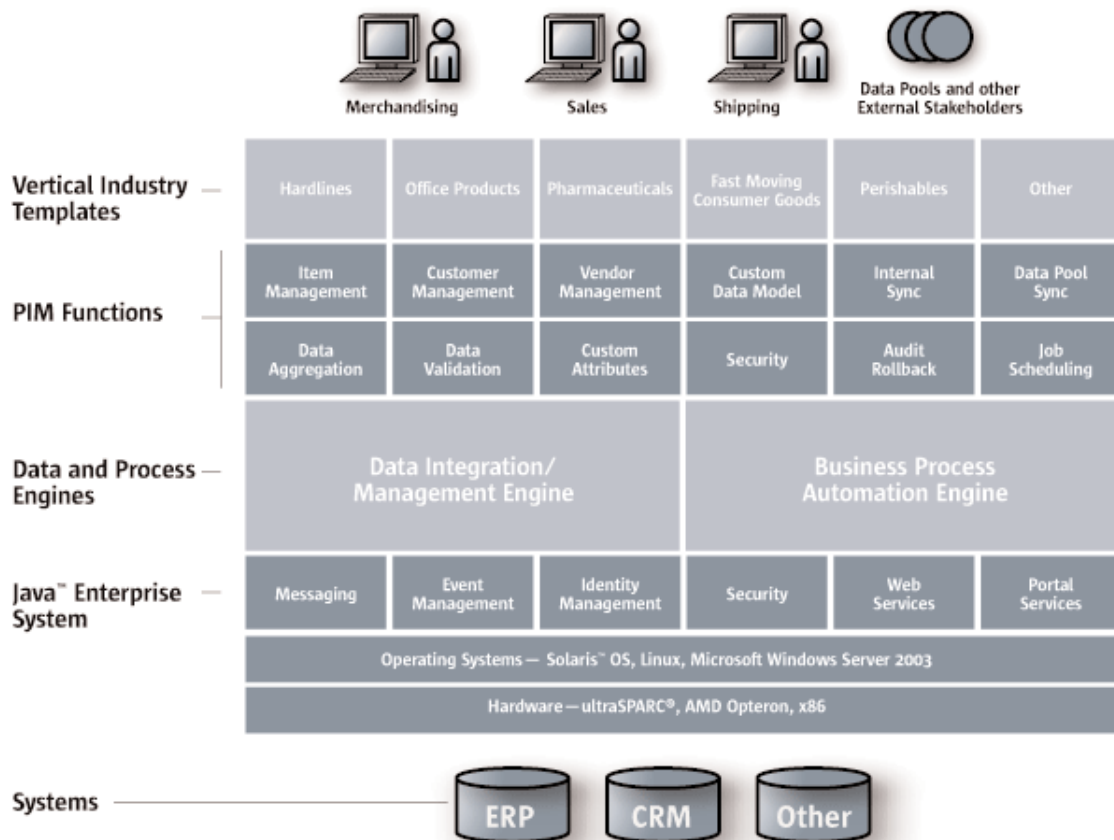


Figure 2: Built on the Solaris Enterprise System, Enterworks EPIM delivers comprehensive product information management capabilities.

Maintain Internal Synchronization of All Product Information

EPIM ensures that everyone in the enterprise who accesses product information — from advertising to merchandising, sales to shipping — sees the identical version of the product data. By synchronizing product information with ERP, CRM, and back-end systems, EPIM maintains the accuracy and currency of all product information for enterprise-wide collaboration.

Aggregate All Product Information

EPIM imports product data from an unlimited number of sources — back-end operational systems (such as ERP, CRM, and spreadsheets), suppliers, trading partners, and other distributed remote sources. EPIM establishes and maintains synchronization of the imported data with its original data source on a user-definable schedule. Ad hoc data sources, such as a trading partner's last-minute pricing spreadsheet, can also be synchronized.

Filtering options let users limit the product information that is collected and imported, storing and synchronizing only the most important product information. Data mapping is easy, with drag-and-drop integration of data models and linked product information sources.

Establish a Single Repository for All Product Information

EPIM stores product information from all product data sources — suppliers, internal operational systems (such as ERP, CRM, and spreadsheets), trading partners, and other sources — in a centralized Master Repository. It provides a valuable single source of all product information that is not available through other applications. In addition, the Master Repository serves as a reliable staging source for multiple internal and external uses of product information, such as in collaborative processes and RFID edgware interaction. Once the source product information has been imported, EPIM validates the data against standards, such as those of EAN UCC or private data pools through which data is shared.

Easily Customize Data Models

Users can create any number of custom product attributes in EPIM, enabling management of different product configurations, pricing options, or delivery alternatives. Users can define and extend standard business rules as well, to create customized validation processes for both standard and extended attributes.

Discover Flexibility with EPIM's Open, Standards-Based Data Model

EPIM manages data as XML entities, which provides the full benefits of open, standards-based attribute management. This ensures smooth integration with trading partners, enabling the sharing of common data dictionaries, standards-based messaging, and interactive business processes. EPIM validates product attributes based on the Global Data Dictionary (GDD), as well as data pool business rules, and supports extended data pool schemas. This allows CPG companies to take full advantage of industry-specific and extended attributes for hardlines, office supplies, fast-moving consumer goods, and other segments.

Streamline Product Information Management with Full-Function Business Process Automation

Product information is acquired, created, managed, reviewed, changed, and processed by many people and departments within the enterprise. Strong workflow is essential to ensuring these processes do not slow down business — or interfere

with the integrity of product information. Unlike other product information solutions that offer minimal workflow, EPIM works seamlessly with Enterworks Process Exchange, a powerful enterprise workflow solution used by some of the world's largest retailers, suppliers, and manufacturers. In combination with EPIM, Enterworks Process Exchange captures and automates best practices for all critical product information processes, including product creation requests, modification requests, order tracking, status changes, approval processes, and continuous workflow integration with trading partners.

Synchronize Product Information Externally with Multiple Data Pools

EPIM supports EAN UCC Global Data Synchronization-compliant data pools, including 1SYNC and WWRE in the U.S. EPIM can generate product information for industry-specific data pools and retailers, private data pools, and multiple country-specific data pools, such as e-Centre in the U.K.

Protect Product Information with Customizable Security Levels

EPIM lets companies establish—and maintain—levels of product information security that match each company's enterprise security model. Users can control data access from the repository level to line item level, based on user and group access rights. At the product attribute level, EPIM provides secure control over pricing, delivery, special materials, and more. Users can establish user and group roles that control access, creation, modification, deletion, and publication of product information in the Master Repository and subset repositories.

Gain New Efficiencies with Job Scheduling

EPIM can be used to create and configure one or more PIM tasks, such as repository synchronization, to be executed in sequence. Scheduled job sets can include multiple tasks; for example, synchronization, transaction export, and transaction "send" can be scheduled as a single set of tasks. And, external job manager systems can be easily integrated using EPIM's Web Services API.

Stay On Top of Product Information with Powerful Auditing

EPIM logs all product information actions, including creation and publication, by storing as meta-data the date, action taken, and specific user information. EPIM lets users view audit information directly from the Master Repository edit screen, and audit logs are available for every item in the repository (Master and Customer). Based on the log data, users can easily roll back to previous states.

Flexible Architecture Delivers Performance and Scalability

EPIM's distributed component architecture and flexible hardware configuration let companies deploy EPIM in multiple ways to maximize PIM performance throughout the enterprise. EPIM supports feature-rich Java technology, which exposes all APIs as Web services and makes user interface components available through HTTP calls. This provides common data sets and the ability to import and export across systems.

Clarity and Ease of Use Means Users Get Up to Speed Quickly

The EPIM user interface presents product information clearly, with simple navigation and quick-scan icons. EPIM offers advanced search and filtering, and includes public and private profiles for filtered content. The user interface makes build-

ing and packaging components straightforward for better item hierarchy management. There are extensive reporting capabilities in EPIM, including repository- to item-level audit trail and reports, transaction level logging, and scheduled event tracking and alerts.

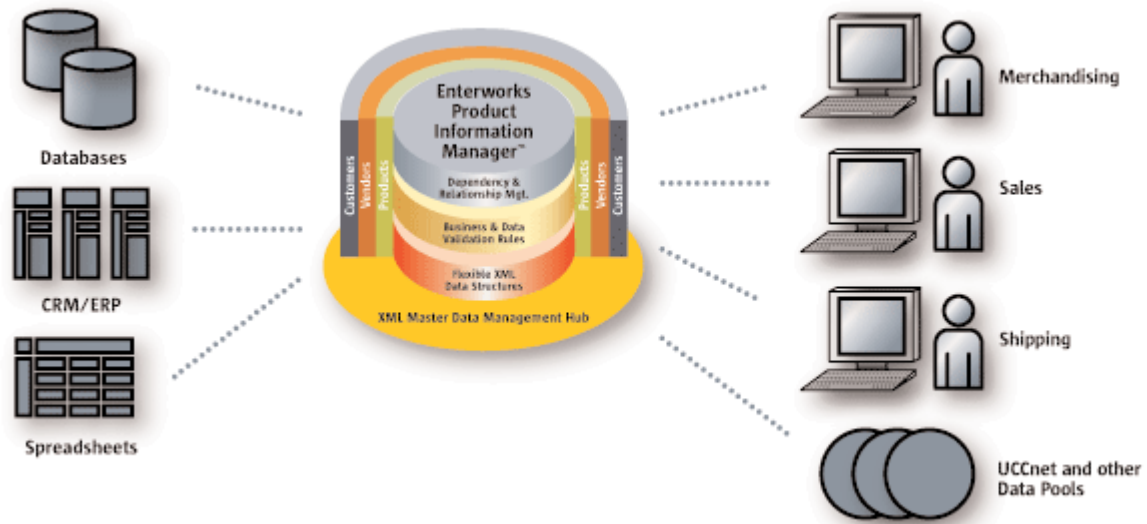


Figure 3: EPIM systems draw product data from multiple internal sources, synchronizing the data continually. Users throughout the enterprise and trading community all work with the same current and accurate product information.

Chapter 6

Conclusion

Global data synchronization is important to suppliers, distributors, and retailers because it reduces the problems associated with automated business transactions. This can improve accuracy and increase business processes. Before reaping these benefits, the CPG industry must first implement a program enabling the ability to create, manage, and share accurate and synchronized product information—Master Data Management.

Sun and Enterworks offer leading solutions for MDM and PIM. With an extensive history as a pioneer and innovator in the EDI and B2B marketplace, Sun's extensive experience working with leading suppliers and retailers is reflected in its customer base. Sun is a leading supplier of IT technology and expertise for supply chain operations. Sun supply chain management and e-marketplace solutions integrate industry-leading, preconfigured, customizable software solutions with Sun's high-performance software and hardware infrastructure. The Sun Enterprise line of servers, the Solaris OS, Java 2 Platform, Enterprise Edition (J2EE™) technology, and Sun StorEdge™ storage solutions provide a strong foundation for mission-critical, supply chain management and e-marketplace functions, with the ability to handle peak loads and provide continuous availability.

Sun, working with companies such as Enterworks, offers a best-of-breed solution that fit your demanding requirements. Built on a foundation of Java Enterprise System offers a revolutionary approach for enterprise software, reducing cost and complexity while delivering market-leading performance and capabilities. Together with Enterworks, Sun offers you the choice of best-of-breed, supply chain solutions, systems compatibility, and scalability—delivering the flexibility and agility you need to grow your business through GDS.

Chapter 7

More Information

Enterworks develops, markets, and supports software that enables manufacturers, suppliers, distributors, and sellers to create, synchronize, and manage product data in a variety of formats. Customers using Enterworks' PIM solutions include global, enterprise-level distributors, as well as small and midsize suppliers and retailers. Enterworks' applications are built on proven business process automation and content integration technology used by some of the world's largest retailers, manufacturing companies, financial services firms, and U.S. government agencies. In addition, the company's solutions are embedded by technology vendors and marketed by partners worldwide. For more information, contact Enterworks at 888-242-8356 or visit www.enterworks.com, or send an inquiry to: mdm-ext@sun.com.

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