Theory&Practice

Manufacturing Insights
An IDC Company

*Welcome to the April 16, 2007 issue of Theory and Practice. We publish every two weeks, examining recent events and offering opinions on key trends in manufacturing, wholesale, and retail processes. Please feel free to forward this newsletter to colleagues or others who might find it relevant.*

* * *

# Minding the Application Gap

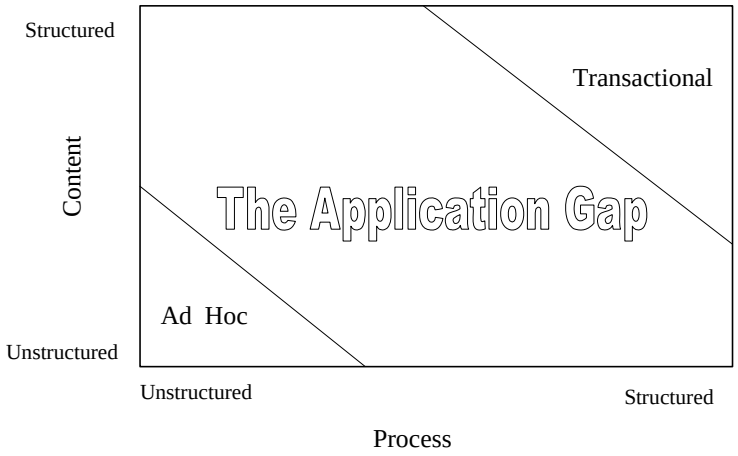
***Bob Parker***

A review of the typical manufacturer's application portfolio will include the expected compliment of modern enterprise products mixed with some quantity of home grown legacy applications that the packaged applications were supposed to replace. Although not perfect, the combination is an efficient package of capabilities for the firm, covering a full spectrum of business processes that have a well defined structure based on generally accepted business or industry practices. Similarly, the data related to these processes can be organized into well designed transaction databases.

When we move from the clerical to the knowledge worker, however, the notion of repetitive well defined processes go away and the technology tools become much more ad hoc. The more amorphous nature of work in the creative class is why more than 80% of work related content is unstructured and most processes are ad hoc. Bringing control to this activity extends the value of IT assets and will be given increasing attention by management.

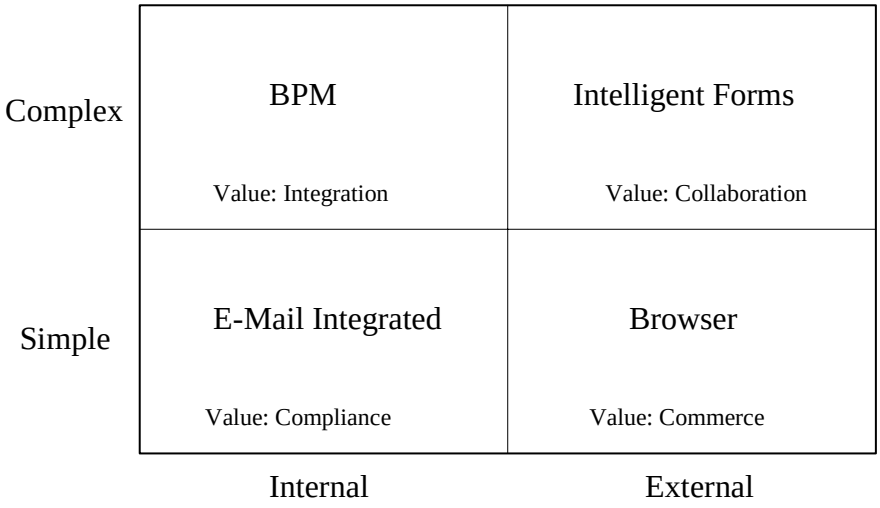
Figure 1 shows the current application gap. At the top right our those activities that have both highly structured processes and information. These transactional requirements are satisfied by enterprise applications. The activities in the bottom left represent those that are completely ad hoc and unique and knowledge workers employ the technology tools available to them to assist in satisfying objectives. In between is the large white space of activity that repeats on some regular basis but defies being packaged into detailed use case, relational database applications.

**FIGURE 1 – THE APPLICATION GAP**



There is a lot of organizational value to be delivered in this frontier between the delivery of standard processes and administration of personal productivity tools. Harvesting the value requires a deeper understanding of the space on two dimensions. First, is the complexity of the processes being supported. Processes become more complex if there are security concerns about the underlying content and how long running the process has to be (how long do you have to track and communicate the status of its state of completion). The second factor delineates between those processes that stay within the organization versus those that must include external constituents. Figure 2 shows the four resulting types of development approaches that are needed.

**FIGURE 2 – DEVELOPMENT PLATFORMS FOR GAP APPLICATIONS**




E-mail based development is best suited for simple internal processes. Development usually involves using the corporate standard e-mail tool to create a routing for a document or form that involves receipt, acknowledgement, and, sometimes, approval. Pioneered by **Lotus** with the *Notes* product line, these applications are now dominated by *Outlook/Office* combinations taking advantage of rudimentary development tools offered by **Microsoft**. Examples would include things like approval of a personnel requisition or the circulation of a report that must be reviewed. The value of these applications lie in assuring compliance with business policy around the review and approval of documents.

Browser based development is the choice for simple, external processes. The ubiquity of browser clients gives the developer assurance that users will be able to interact. Early limitations related to the stateless nature of HTML have been overcome, first by active server pages from Microsoft and more recently from the more open asynchronous Java and XML (AJAX) methodologies. While these approaches bring more state management, applications are still centered on individual forms in a specific context and don't support long running processes. Guided selling interactions and simple self service are the applications that are best served by this development approach and, as such, value is derived from supporting commerce.

Business process management based development supports complex, internal processes. The specialized tools related to this activity established themselves around tough process orchestrations across applications and value still comes largely from integration. The tool providers have added the ability to include human, not just application to application, interfaces to expand their usefulness. Applications built with these tools include things like synchronizing the addition of a new customer or prospect.

Intelligent document development supports complex processes that span organizational boundaries. BPM is limited by the lack of a ubiquitous client and browser development has difficulty with long running processes. The applications built on this platform bring collaborative value for things like coordinated design or complex bidding processes. **Adobe** is the clear leader in this area, leveraging the broadly deployed reader client and the ability to distribute portable, secure documents supporting multiple types of content and orchestrating processes.

**The right tool for the job.**

Manufacturing Insights advises industrial firms to build competency in all four development platforms and to know how to apply them to the appropriate requirements. Intelligent document development has the most value so a specific group dedicated to creating these applications is the highest priority. BPM applications are probably best served by an internal organization while e-mail development can be supported by the IT organization and knowledge workers within the business functions. Browser applications would be a mix between IT and external sources. Supporting the white space between ad hoc productivity tools and well defined transaction applications will magnify the value of the information assets for manufacturers.

* * *

Bringing Technology to Products

***Joe Barkai*** *and* ***Bob Parker***

**Situation Overview**

The amount of digital technology that goes into the products and services sold by manufacturing companies is on the rise, as embedded systems gradually replace traditional mechanical and electromechanical systems. For example, the Mercedes S Class employs 3 separate data bus systems to manage 60 controllers and 110 motors and actuators. By 2010, software-embedded control units will represent 35% to 40% of the value of the average car, and the electronic control module market is expected to grow at a CAGR of 6-8 percent. Toyota spent $1B on software development in 2004.

This trend is as strong in other sectors. Digital technology is becoming the core of consumer electronics and appliances that are fast becoming the networked home, and RFID is positioned to improve everything from efficient stock replenishment to ensuring food safety.

Even a mature industry like chemicals is not immune. **BioLab**, a division of Great Lakes Chemicals that provides swimming pool chemicals, wanted to offer services to differentiate itself in a commodity market. The company installed wireless sensors to monitor water quality and automatically dispense chemicals at the locations of its largest commercial clients such as water parks and hotels. Clients eagerly signed up. They saw it as a way to improve their own customers' experiences and save on maintenance costs. **BioLab** also enjoyed an unexpected benefit – by having visibility to consumption, they improved their supply chain planning and reduced inventory.

**The Manufacturing Company's Dilemma**

Traditionally, a manufacturing company's product technology efforts focused on core capabilities like material sciences, traditional engineering or production techniques. Increasingly, new product improvement technology is digital and silicon based, and is highly dependent on information systems. The success of manufacturing companies hinges on how the chief technology officer, chief information officer, and their respective organizations work together.

Success in incorporating digital content into products can be greater if the CTO and CIO work together. Two dimensions are involved when deciding on the level of collaboration required for digital technology immersion. First is the level of commonality between the efforts – are there common hardware components and systems, or software development efforts? Second, what level of integration with information systems needed to effectively support the product technology?

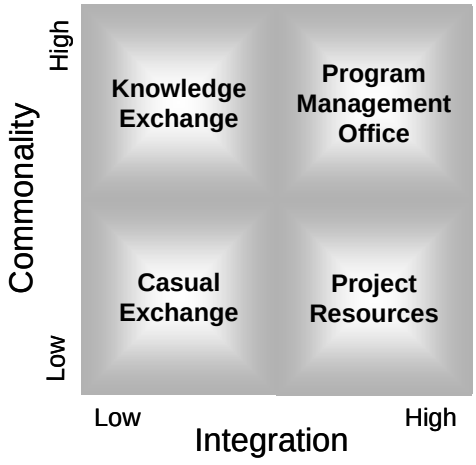
The four resulting quadrants in the figure below should influence and shape a company's approach to resource sharing in this area.

- Low commonality, low integration – the number of manufacturing companies in this category is shrinking. There is little need for additional collaboration beyond the traditional casual information sharing.

- High commonality, low integration – where there are common technologies and practices but little need to integrate with information systems. Collaboration should establish and promote mechanisms to share knowledge and best practices. This is more likely to appear in electronics manufacturing – high tech, consumer, medical equipment – where both product and IT management need to understand the role of key components.

- Low commonality, high integration – where there is a high requirement for effective integration to a company's information systems, companies must create a mechanism to share resources on specific projects. This is more likely to surface in capital assets and consumer durables where manufacturers are embedding common control and diagnostic technologies. The product systems use unique technologies, but must integrate data with the company's transactional applications.

- High commonality, high integration – in this situation, a program management office (PMO) function is needed to extend resource sharing to a common oversight. Where there are several such programs, a common organizational function may be needed.



**A New Paradigm**

The framework discussed above is inherently prescriptive, based on which quadrant a manufacturing company is. In the high commonality, low integration category, companies should let the traditional CTO and engineering groups take the lead. In low commonality, high integration situations the traditional IT organization should lead. The fastest growing category is high commonality, high integration. This type requires different mechanisms for manufacturing companies.

Given this framework for deciding how to deal with the cross-organizational issues, companies should formalize their processes so that consistent and predictable performance can be delivered. If a common program management is needed, three elements should be included in the process:

- Portfolio management – projects in process and in the pipeline should be tracked so requirements can be aligned with resources.
- Resource management – resource allocation should be optimized for the task and the particular type of collaboration.
- Option Values – like the **BioLab** example above, these collaborations are likely to yield additional business benefits beyond initial expectations. There should be a review process early in projects to identify the options the investment offers and determine how best to capture those benefits.

Manufacturing organization are experiencing substantial transformation as their markets become more elaborate and intricate, technologies more complex, and traditional approaches can no longer sustain the pace and growth. Embedding silicon-based information technology in traditional products can help manufacturers increase and protect market share, and identify new revenue opportunities. However, these organizations need to establish the necessary framework for IT governance and superior decision making that will capitalize on these opportunities.

* * *

## Noteworthy

- **UGS** announced that Military Air Solutions, a business group of BAE Systems, has selected *Teamcenter* software as its knowledge management technology for specific aircraft platforms. *Teamcenter* replaces an existing application and a number of legacy systems. Military Air Solutions will use *Teamcenter* to support its new business model of providing enhanced post-production support for customers' aircraft. Teamcenter will serve as the foundation for Military Air Solutions' maintenance, repair and overhaul (MRO) offering and will manage all of the product configurations for an individual aircraft – from design to disposal. It will also serve as the platform for integrating the data and functions associated with aircraft engineering and post-delivery service and support.
- **IBM** announced that the Honda Racing F1 Team will develop and manufacture its 2008 Formula One car with the help of IBM software and services. The project is based on **Dassault Systèmes'** *CATIA* and *ENOVIA VPLM*, with infrastructure support from IBM product lifecycle management products, including *WebSphere Application Server* and IBM *Rational Rose Data Modeler*. Together, these offerings enable the integration of the design and production process. Also included is **Geometric Solutions'** *xPDM* gateway to integrate *ENOVIA VPLM* with the legacy *Teamcenter* PDM environment which will allow the Honda Racing F1 Team to rapidly their existing systems with minimal disruption to their business processes.

- **Motorola** mobility, formerly **Symbol**, introduced the *MC35* Enterprise Digital Assistant (EDA), an all-in-one communication device. The *MC35* expands the line of EDAs which are designed to serve multiple purposes while being durable enough for heavy use in office and field environments.

- **Agile Software** announced the general availability of its latest version of the *Agile 9.2* product line. The release, *Agile 9.2.2*, provides new capabilities centered on improving collaborative processes and product related decisions. Agile also announced that Freescale Semiconductor has selected *Agile 9.2* to help increase global collaboration and visibility across their product network.

- **CMS Software** of Toronto and **XKO Software** of the UK have agreed to merge their ERP software companies. The combined business will have sales of over US$50 million, employ 300 people and have more than 1,400. The businesses will continue to trade as CMS and XKO pending a review of operations.

- **GlobeRanger**, a provider of RFID applications, announced the release of its *UID Solution Accelerator Version 1.0* to help U.S. Department of Defense suppliers meet the military's identifier requirements. The Defense Department's UID rule requires contractors to mark items with an acquisition cost of $5,000 or more with a unique identifier, such as a globally unique serial number. The UID system's purpose is to track each piece of equipment or item, which the rule defines as a single hardware article or unit formed by a grouping of subassemblies or components. The U.S. Coast Guard and other government agencies are also reviewing their UID needs and could adopt similar standards.

- **Sockeye Supply Chain**, a supply chain software company, announced a new inbound supply chain application, dynamic replenishment. The new module was developed by Sockeye, and validated by its work with Hewlett-Packard in supporting the world's ninth largest supply chain.

- **Oracle** announced the availability of Oracle *Manufacturing Execution System for Discrete Manufacturing*, a new application that enables manufacturers to deploy Oracle Applications directly on the shop floor without integrations with third party manufacturing execution software. Part of the Oracle *E-Business Suite Release 12*, this latest manufacturing offering gives companies with low-to-medium complexity environments increased shop floor visibility, and the ability to reduce manual activities. Oracle also announced the availability of new capabilities for processes manufacturers within Oracle *E-Business Suite Release 12*, including a new Manufacturing Execution System (MES) designed to give customers better control and lower operating costs. This latest release includes support compliance processes, lean manufacturing, global operations, and improvement of product innovation.

- **Workbrain** announced that it has reached a definitive agreement with **Infor** under which Infor will acquire all of Workbrain's outstanding common shares at a price of CDN$12.50 per share in cash pursuant to a statutory plan of arrangement. The transaction values Workbrain, on a fully diluted basis, at approximately $227 million dollars. This all-cash transaction for 100% of the Company's common shares represents a 25.6% premium over Workbrain's volume weighted average share price on the Toronto Stock Exchange on Friday, March 30, 2007, and a 40% premium over the volume weighted average price for the most recent 30 trading days on the Toronto Stock Exchange.

- **Sterling Commerce** announced the availability of two new modules for the Sterling *Warehouse Management Solution* (WMS): the *Resource Planning* module and *Activity Reporting Manager* module. The new *Resource Planning* module provides increased visibility into labor performance within the warehouse. The new *Activity Reporting Manager* module ensures accurate billing for tasks executed, enabling companies to understand the cost to serve multiple clients or divisions. The new modules improve the software's ability to capture productivity data and create reports based on that activity, making it possible to do more efficient deployment of labor and more accurate billing for services delivered. The *Resource Planning* module is designed to manage demand variability by

providing analytic capabilities that enable better labor deployment. In addition, it monitors activity with real-time views of operations, enabling continuous improvement for increased productivity.

- **Software AG**, a European middleware software provider, and **webMethods** announced that they have entered into a definitive agreement for Software AG to acquire webMethods in a cash tender offer for $9.15 per share or approximately $546 million. Together, the companies bring an expanded product portfolio to a global customer base of over 4,000 organizations and 100 partners in complementary geographies around the globe. Specifically, Software AG will more than double its customer base in North America. This combination also brings complementary industry strengths and minimal customer overlap, providing mutual access to additional customer segments, particularly in financial services, manufacturing and the public sector. This acquisition builds on the market positions of both companies and is a major step in Software AG's recently announced plans to more than double its revenue to EUR 1 billion.

- **Adonix**, a tier to provider of enterprise resource planning, announced that Lee Supply Company selected the Adonix *X3 Discrete Manufacturing ERP* suite to integrate existing business software systems. Lee Supply is a distributor of engineered products servicing the mining, environmental, construction and municipal markets in the Mid Atlantic and South Eastern region. The company employs ninety people and is headquartered in Charleroi, PA with branches in Shady Spring, WV, and Lexington, SC.

- **Sciemetric Instruments**, a provider of manufacturing intelligence software, announced the general availability of its noise, vibration and harshness (NVH) and torque testing systems, *SigPOD NVH* and *SigPOD Torque*. *SigPOD* is a hardware platform designed for visibility in the live production environment. Sciemetric offers a full range of *SigPOD* instrumentation products that are used to verify and control a variety of standard manufacturing operations such as assembly press monitoring, leak testing, vibration analysis and functional testing.

- **E2open**, a provider of supply chain management software, announced that Celestica has selected E2open for its LiveShare supplier e-collaboration initiative. Celestica will implement E2open as its multi-enterprise platform to support its procure-to-pay processes. E2open also announced that Spansion, a provider of flash memory products, has selected E2open to manage its multi-enterprise global inventory and work-in-process management processes. Spansion will deploy E2open to obtain real-time visibility and control of its WIP and finished goods inventory throughout its globally dispersed internal and external manufacturing, assembly and test operations, both at Spansion facilities and with subcontractors. Spansion expects to realize significant savings over the current costs required to operate the legacy system it is replacing. Spansion also expects savings associated with inventory cost reductions made possible by the new functionality E2open will provide.

- **Apriso**, a provider of manufacturing process management software, announced a new version of their *FlexNet Quality*. *FlexNet* is designed to complement existing functionality within ERP systems.

- Consumer electronics seller Crutchfield has chosen *JunctionMCR* built on **Microsoft** *Dynamics AX* to improve its merchandising planning. Crutchfield has been conducting direct-to-consumer sales for more than 33 years and the company will replace its custom merchandising management system. Crutchfield hopes to be able to unify vendor and item management in one environment, simplify the individual user's experience, make product procurement more efficient, and improve its overall forecasting capability.

- **IFS** has received an order for IFS Applications from Saab Microwave Systems for the delivery of business applications for product lifecycle management. The applications will be used to create a foundation for developing a more efficient flow of processes to manage product development, manufacturing, and after sales support. The order is worth approximately SKr 10 million and initially includes components for product data management and document management. The intent is to

develop a common product model for organizing product data whereby the users take responsibility for and maintain the information they produce, from concept to after sales. The product model integrates data and information from processes such as software, electronic and mechanical engineering, as well as purchasing, manufacturing, and quality control, which means that different user categories can share product information in a controlled manner. IFS Applications will replace several of Saab Microwave Systems' existing applications for a common product model. The new solution will go live in September 2007.

- **Retalix**, a provider of software products for food retailers and distributors, announced that 7-Eleven Norway and Sweden, a part of the Reitan Service Handel group, has deployed Retalix software applications with the intent to improve operations and management of its 185 convenience stores in Norway and Sweden. Retalix *StorePoint* provides 7-Eleven Norway and Sweden with functionality to support its various business initiatives at the stores, while the Retalix head office solution (*HOST*) enables price management, sales reporting and margin analysis at the central management level. The rollout of Retalix StorePoint has been completed in all 185 7-Eleven stores in Norway and Sweden. Retalix is partnering with **Wincor Nixdorf** Norway for the contract, with WN Norway providing hardware, project management of roll-out and support.

- **Kaidara Software** announced that A-dec, a manufacturer of dental equipment, has selected the Kaidara *Advisor* knowledge management system for its technical support operations. Kaidara has a presence in medical equipment, providing applications for technical support centers that handle complex products such as at GE Healthcare and TomoTherapy. More recently Kaidara has expanded this vertical focus to include functionality in diagnosing and finding the right tactics for medical equipment support issues.

- **Logility** announced that Barilla America, the U.S.-based division of The Barilla Group, Italy's largest food producer, has selected Logility *Voyager* to try to strengthen manufacturing planning, increase production efficiency and boost customer service levels. Barilla America produces the fastest-growing pasta and sauce brands in their categories and its pasta producing plant, located in Ames, Iowa, is among the largest pasta plants in the U.S. and the forth largest in The Barilla Group. To better support growth, Barilla America is opening a second plant in the U.S. in Avon, NY in the spring of 2007.

- **SYSPRO**, a second tier ERP provider, has announced an upgrade to its lot traceability capabilities as well as other enhancements to facilitate the ability of manufacturers to trace parts and lots. This issue of being able to trace lots, ingredients/parts back to their source recently gained national importance with the contamination of pet food. In addition to enabling users to trace items from their source to the current location while maintaining assurance certification and tracking expiration dates, there is now one-to-one tracking between component serials/lots and parent item serials/lots. This gives manufacturers the ability to track which component serial numbers were used in the production of a particular parent serial number and which component lot numbers were used in the production of a particular parent lot. In addition, the upgraded module maintains a history of traceable items for accountability and customer service follow-up and keeps notes about inspections.

- **Aras**, an open-source PLM software provider, announced that Ogihara America Corporation has selected the Aras *Innovator* product for enterprise quality management and Advance Product Quality Planning (APQP) compliance. Ogihara is an automotive supplier of vehicle body parts including door, fender, hood, and roof panels to DaimlerChrysler, Ford, GM, Mitsubishi, and Nissan.

- **SecureRF** announced the availability of its *LIME Tag* with security and cold chain management features. This battery-assisted passive tag uses SecureRF's security technology that authenticates and encrypts data communications on the tag. It is an item-level application that provides tamper-proof data storage on the tag, and ensures privacy by allowing only authorized readers access to

sensitive information. The *LIME Tag* will also help pharmaceutical manufacturers and other cold chain distributors track and monitor product temperature history.

## Manufacturing Insights Latest Research

### Low-Cost Manufacturing in China: 1Q07 Update

**Kimberly Knickle**

April, 2007 - Doc # MI206271 Quarterly Update

This Manufacturing Insights update is a follow-on quarterly update in our Emerging Manufacturing Agenda program. This document provides updated information and discusses key developments in the fourth quarter.

### Applications Unlimited: Is It Enough to Create New Opportunities for Oracle?

**Debashis Tarafdar**

April, 2007 - Doc # AP664109P Perspective

This Manufacturing Insights Perspective highlights key messages and takeaways from a recent Oracle event in Singapore.

### Worldwide Manufacturing IT Spending Guide, Version 2, 2006

**Jay Holman, Jessica Goepfert, Bob Parker, Gary Koch, Jay Gumbiner, Emerson Gibin, Roman Maceška, Nina Bonagura, Will Brennecke, Kimberly Knickle**

April, 2007 - Doc # MI206282 Pivot Table

This Manufacturing Insights Pivot Table presents our best estimates and forecasts for the worldwide manufacturing IT opportunity.

### Asset-Oriented Value Chains 2Q07 Industry Outlook and Application Strategy Guide

**Kimberly Knickle, Jay Holman, Bob Parker**

April, 2007 - Doc # MI206326 Customer Needs and Strategies

Asset-oriented value chains (AOVCs) are characterized by segments that produce base materials at asset-intensive production facilities such as chemicals, metals, pulp/paper, construction materials, and more.l

## In the News

- **PTC Launches Product Development Process Framework That Links PLM Investments to the Achievement of Critical Business Objectives - 29 March 2007,** (c) 2007 Business Wire. All Rights Reserved.

  Manufacturing companies are increasingly pressured to bring products to market faster, at lower cost and with higher quality," said **Joe Barkai,** partner, Manufacturing Insights, IDC. "As companies improve their product development processes to address these pressures, they must invest wisely, as investments in tools and methods that do not address the entire product lifecycle can result in frustration and inability to achieve business goals. Organizations need to be able to determine when to add incremental investments in technology in order to achieve specific business initiatives and true competitive differentiation.

- **RFID spending slows, 15 March 2007, Purchasing,** © 2007, Purchasing, Reed Business Information, a division of Reed Elsevier, Inc.

  Most companies are cautiously spending on radio frequency identification (RFID) investment, but prospects of future investments are encouraging to suppliers. Those are the findings of a new report from market researcher **Manufacturing Insights.** U.S. companies rank mandates and/or federal regulatory requirements as the primary objectives of RFID, followed by track and trace improvements.

## Web Conference

**Closing the Last Mile—PLM for the People - April 30, 2007 2:00 pm Eastern**

Join Practice Director **Joe Barkai** as he offers a sneak peek of his forthcoming report on Next Generation Product-Lifecycle Management. In addition to addressing product life-cycle management challenges stemming from the globally connected economy, Barkai will touch on how PLM tools can significantly impact innovation and inter- and intra- enterprise collaboration, which can dramatically improve every aspect of the product life cycle.

## Meet Our Analysts at an Upcoming Event

**Auto ID Showcase 2007 - April 18, 2007**
Rock Financial Showcase, Indianapolis, IN
Join us at booth #3 and meet our sales executive, Maire Kushner.

**IW '07 Best Plants Conference - April 24-25, 2007**
Indiana Convention Center & RCA Dome, Indianapolis, IN
Analyst: Bob Parker

**RFID LIVE – April 30-May 2, 2007**
Dolphin Hotel, Orlando, Florida
Analyst: **Kimberly Knickle**

**AIAG EWS Warranty Conference – May 24-25, 2007**
Detroit, MI
Analyst: **Joe Barkai**

**PLM Summit – June 5-6, 2007**
London, UK
Analyst: **Joe Barkai**

**IDC IT Summit – June 7-8, 2007**
Boston, MA
Analyst(s): **Bob Parker, Joe Barkai**

**M2M United & Manufacturing Day - June 18-21, 2007**
The Westin Chicago North Shore, Chicago, IL, United States
Analyst: **Joe Barkai**

**4th Annual Remote Device Monitoring & Management Summit**
June 25-28, 2007, The Seaport Hotel, Boston, MA
Analyst: **Joe Barkai**

---

TO **SUBSCRIBE**: http://www.manufacturing-insights.com/MI/services/newsletter.jsp
TO **UNSUBSCRIBE**: - Send e-mail to subscribe@manufacturing-insights.com enter "unsubscribe" in the subject
TO **SEND PRESS RELEASES** TO MANUFACTURING INSIGHTS TO INCLUDE IN UPCOMING NEWSLETTERS: preleases@manufacturing-insights.com