Re-engineering the Time-To-Market Process

By Eddie Ho, Eric Dunn, and Peter Stoll

The RISC System/6000 ®(RS/6000™) running AIX is the premier platform for re-engineering manufacturing processes. The open system framework enables the best applications to be integrated into a manufacturing environment. This article describes the benefits of combining several IBM software applications to reduce the time to market for manufacturing companies.

As we approach the 21st century, the dominant themes in the computer industry are integration and interoperability. All areas of business—manufacturing, finance, human resources, and distribution—are moving toward sharing information. This article describes how the RS/6000 and AIX can combine two manufacturing applications that use a common database. The resulting improvement in communications between the product design and manufacturing organizations in a company can dramatically reduce the time to get new products to market.

The Computer-Integrated Manufacturing (CIM) initiative in the manufacturing industry brings together software packages that integrate the end-to-end development and manufacturing process. Figure 1 illustrates shifting the paradigm from a sequential to an iterative workflow model. As part of CIM, IBM's ProductManager and Computer Integrated and Interactive Manufacturing (CIIM) from Avalon Software work together with the associated Computer-Aided Design (CAD) and shop-floor applications to manage the flow of information between product design groups and manufacturing.

One of the keys to successful manufacturing is the speed at which new products are brought into the marketplace. A winning strategy for any manufacturing company is to obsolete its own products with new ones before the competition does. ProductManager/CIIM integration provides tools to enable a company to accelerate the pace of new product introductions and to remove products quickly when their replacements are

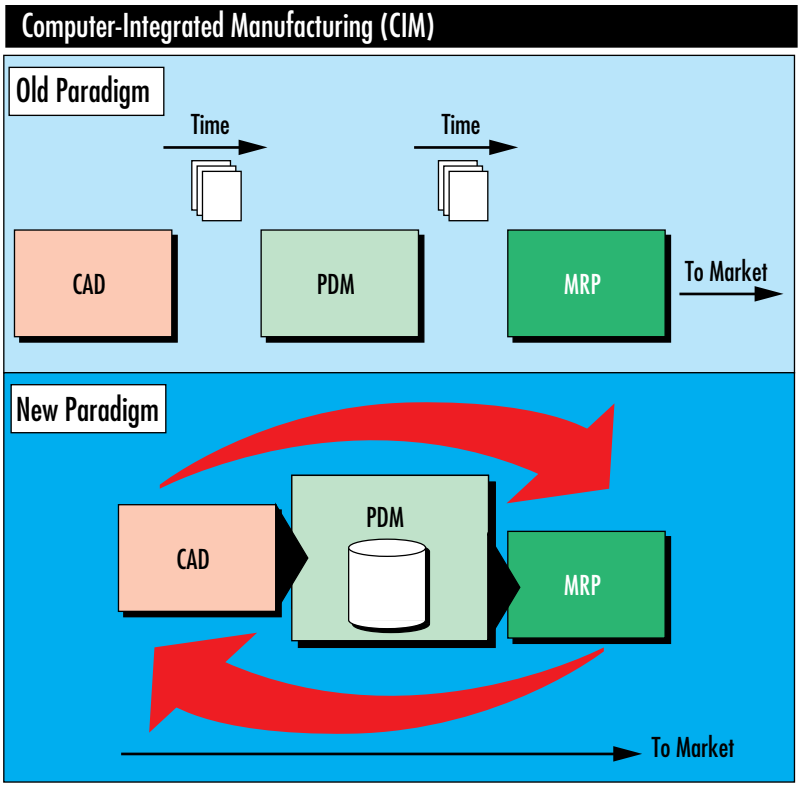

Figure 1. Computer-integrated manufacturing

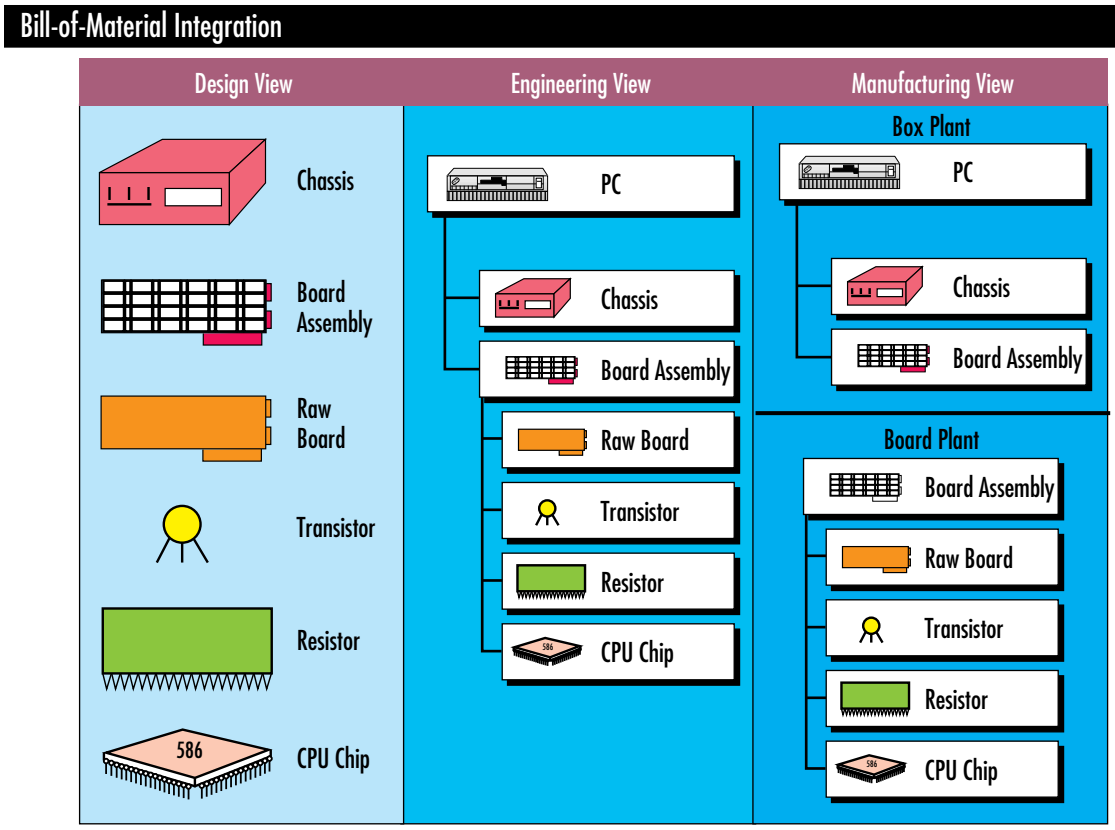

Figure 2. Enterprise bill-of-material integration

ready. PM and CIIM tie together existing software packages that cover all relevant development and production functions including CAD, product structure definition and engineering records, manufacturing resource planning, and shop-floor support activities such as routings and operator instructional aides.

IBM ProductManager

Collapsing the cycle-time-to-market presents the manufacturing industry with a fundamental opportunity to re-engineer its core business process to its competitive advantage.

IBM's ProductManager manages the engineering information associated with the product development and manufacturing processes. It provides the seamless integration for most of the existing CAD and MRP products in the marketplace. Its three major functions, along with other services, enable product development groups to control the design phase of a new product and introduce it smoothly into the manufacturing process.

Engineering change control process: Enables developers to design and release products incrementally to manufacturing. All information related to any product—such as materials, tools, and drawings—can be stored by using a version control process to account for changes to the specifications.

Bill-of-material management process: Enables developers to build a bill-of-material and associated manufacturing process information during the new product design phase. It also provides a robust set of product structure functions for building and changing the content of a product bill-of-material, and then releasing the final version to manufacturing. Figure 2 represents the vertical view of each group to their respective work type.

Electronic foldering: This state-of-the-art workgroup application enables development and manufacturing groups to share any data related to managing the life cycle of a product: design, production, service, and end-of-life. Authorized individuals can check out documents from the Document Manager vault, rework the document to fix a design flaw, then send it to all the appropriate persons who need to know about the change via an E-mail messaging system.

The traditional approach to introducing a new product involved organizations only when the product reached a development stage that required their service. This sequential approach increased the time to bring a new product to market. Figure 3 illustrates the workflow using the new foldering concept.

Electronic foldering changes the paradigm for the new product introduction process by introducing the concept of *concurrent engineering*—the development and manufacturing departments working in parallel during the early phase of product development. ProductManager uses this methodology to collapse the total cycle time. When design engineers, manufacturing engineers, cost engineers, purchasing buyers, production schedulers, documentation writers, and marketing and advertising people can all communicate concurrently instead of serially, the time between decision and execution is sharply decreased.

ProductManager provides a turnkey solution for facilitating the cycle time reduction initiatives for the new product introduction process.

Computer Integrated and Interactive Manufacturing (CIIM)

CIIM is an Enterprise Resource Planning (ERP) product from Avalon Software Company designed for manufacturing logistics and inventory control. Figure 4 shows the modules in CIIM.

The CIIM product enables manufacturing organizations to plan production schedules, order the appropriate materials and components, and control the fabrication of assemblies and the subsequent aggregation/shipment of a completed customer order.

The interaction between ProductManager and CIIM is confined to the inventory control and bill-of-material module. Product information produced by ProductManager is communicated to a manufacturing system like CIIM. The product design area is responsible for defining its content and structure as well as the process required to fabricate or assemble it. This data is sent to the ERP system to drive the component planning and production scheduling process.

The communication between an engineering records system and an ERP or manufacturing system has traditionally been sequential, as described earlier. The formal communications relationship between many development labs and their manufacturing counterparts could be viewed as "throwing the design over the wall" from the lab to the factory. The lack of integration systems was part of the barrier between the two.

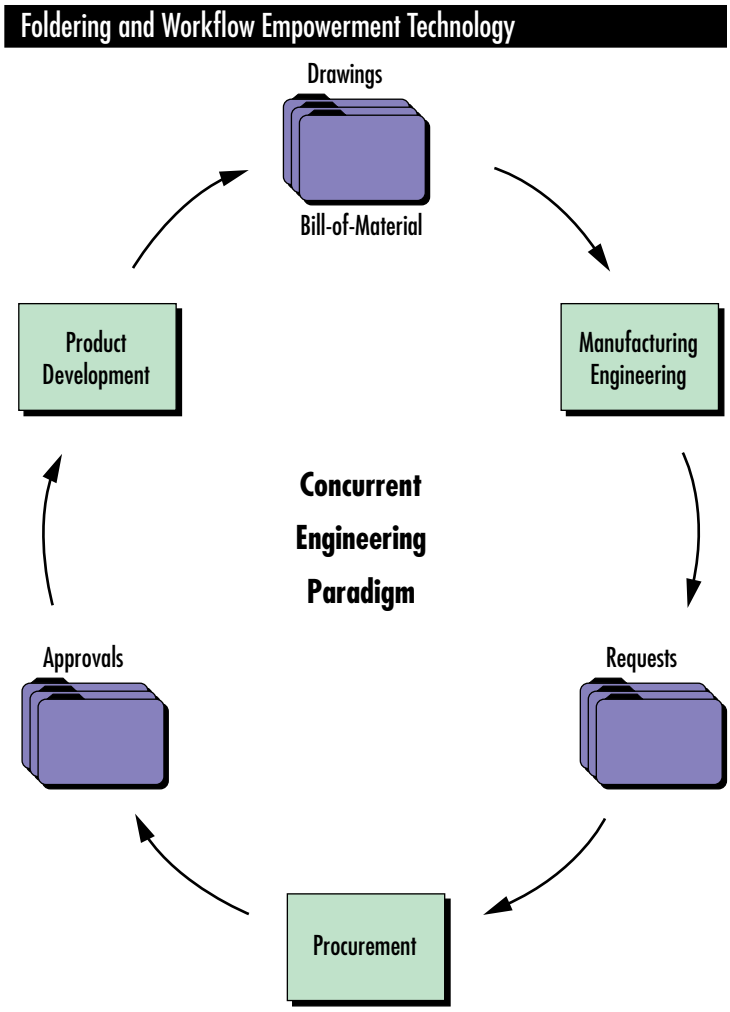

Figure 3. Foldering and workflow empowerment technology

The ProductManager/CIIM integration is specifically designed to remove those barriers between development and manufacturing. Sharing processes such as assigning part numbers, engineering changes, and bill-of-material data is one way to accomplish this. Data is updated in CIIM as it is created or modified in ProductManager.

The electronic foldering process in ProductManager and shared data between the development and manufacturing organizations represent the critical success factors in enabling the new product introduction cycle time to shrink dramatically. Consider the possibility of a design person, with a new idea, signing onto a CAD tool at 8:00 A.M. and having the idea with associated documentation approved by everyone

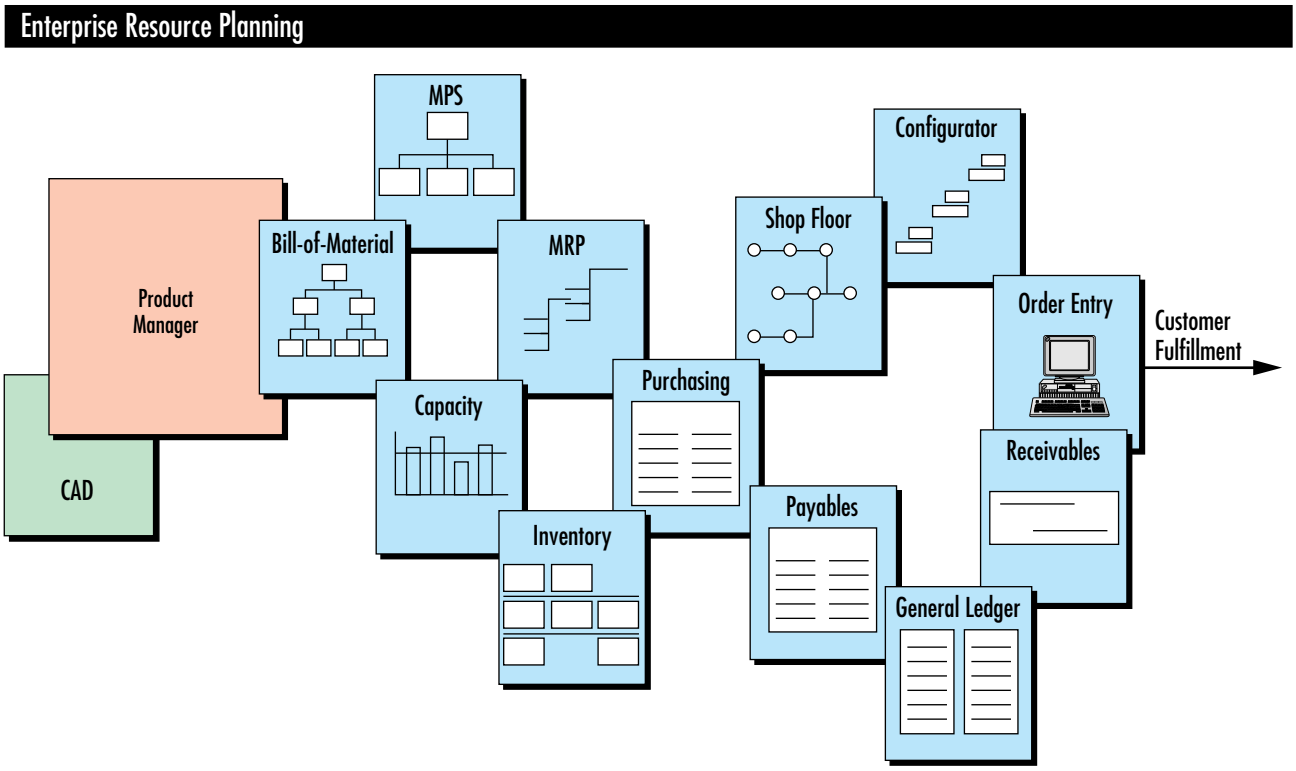

Figure 4. Enterprise resource planning

in the development/manufacturing/marketing/distribution communities by the end of the day. That could produce a true competitive advantage.

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