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## Industry Update February 2004

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DIFFICULT TO MANAGE

### Effective Data Management Key to Streamlined Product Development Process

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#### Users of Value Priced Solids Modelers, CAE, Digital Manufacturing Getting in on the Action

By Daratech Research Staff

Throughout the years, manufacturing industry has employed hundreds of strategies to improve decision-making ability and speed product development cycles. Parametric-based CAD, intelligent mark-up capabilities, Internet-based collaboration tools, and tighter CAE integration are just a handful of advances manufacturers have leveraged to improve their work processes. Yet while new applications continually flood the market promising noticeable process gains, the ability to adequately manage and reuse data is universally looked upon as the key to product development.

During the mid-1990s, the focus for many IT solution providers and consumers shifted from processing data—raw facts, often with no context provided—to capturing, processing and organizing information, which involves not only capturing data but embedding it in a context of design intent and decision support. With this, the focus expanded from simply capturing data to applying

it to help fulfill business drivers—that is, to leveraging the information. At the same time, companies recognized that the linkage and synchronization of design information with manufacturing and process information has great potential economic benefit. At its fullest, it offers the enterprise a framework in which to manage the product creation processes and enables the re-use of successful designs and processes.

Most new product designs are based on existing products—therefore, preliminary design time can be compressed if a designer can find and use prior product development and product-use data. Manufacturing companies around the world recognize that one of the most powerful ways to improve efficiency and quality, and reduce cost and time-to-market, is to achieve better data use and reuse, together with closer, better managed communication across the enterprise and the value chain. Consequently, we believe data management tools will continue growing in enterprise importance to the manufacturing community.

## **Buyer Strategies**

What's the best way to connect and manage enterprise data? Indeed, one of the most hotly debated aspects of technology implementations today is whether the more efficient route to an IT solution suite which addresses a business need is to combine best-of-breed technologies, or to select an enterprise solution from a single vendor. The best-of-breed approach allows consumers to select the best technology for their needs in each product category; however, these applications then must be integrated with one another, often at great cost. CAD products are notoriously difficult to integrate, many being based on proprietary data formats. On the other hand, selecting an enterprise vendor with strengths in several areas can

produce a solution with much less integration pain, but may provide somewhat less than optimal functionality. Most PDM vendors with a captive CAD product have had success selling PDM into their own CAD accounts.

A central challenge for all data management solution providers is to raise awareness of the potential business impact of better project execution and product lifecycle data management. At Daratech conferences year after year, technology consumers cite the need for closer collaboration with design partners and suppliers, the importance of managing lifecycle data, and the difficulties of ever-changing collaboration partnerships—but the issues are continually raised, with no clear technological winner in sight. Even in cases where technological solutions appear to exist, the cultural changes required to take full advantage of available solutions is a tremendous obstacle.

What's the problem? Most companies don't know exactly who creates and uses each type of data it creates—and therefore who should be added or subtracted. To most effectively use all of the valuable information within an enterprise, a company should map out all of the creation and use tasks—and the processes for getting data from one task to another. Data is often lost in transmission/translation, turned into unnecessary forms given current IT tools (ie. paper for hand reentry where a converter could be written), or not used in the best-possible form, etc. Auditing both data and processes lets companies design an efficient overall approach. In our view, IT vendors that can best help users overcome these obstacles stand to prosper.

One message that technology providers seem to be hearing from their customers is that aspects of this technology are new and unproven, and thus their benefits must outweigh

the risks inherent in new tools of any kind. Vendors seem to be moving away from the technology-focused marketing message of “do it better/faster/cheaper,” to messages that emphasize the ability of these tools to reduce risk—cost, schedule, rework, product failures and the like.

In today’s environment, our findings suggest that many organizations are looking for what Daratech terms 3-6-9 solutions—software that can be implemented in three months, have paid for itself in six, and create ROI in nine. The PDM market, with traditionally long and training intensive implementations, are not immune to these demands. Clearly one of the most critical decision factors in vendor selection is return on investment. The greatest success is being seen by vendors with a compelling return-on-investment message. Dassault’s SMARTEAM has found some success with a rapid ROI message that promises product scalability and customization.

An example of a powerful ROI message would be the reduction of warranty costs. Indeed, warranty issues cost manufacturers billions each year, and to combat this, manufacturers are seeking ways to identify the root cause of the warranty issues and correct them in follow-on designs of similar products. Solution providers would enjoy tremendous success if they could tie their product benefits to lowered warranty costs. By creating such value, the IT cost for manufacturers would appear minimal.

Another question manufacturers have when selecting a vendor is “Do they understand my business?” When selecting a PDM system, manufacturers naturally look for a vendor that has domain expertise in their particular field, so they don’t have to waste time explaining their business to the vendor. The first step in a customers’ vendor selection process is creating a short list of technology suppliers to be investigated in more detail. One of the best

ways a supplier can get onto that list is to be seen as focused on the prospect's manufacturing vertical. An example of this is a recent announcement by PTC that its Windchill solution is in use at approximately 300 aerospace and defense customers. Thus, these 300 customers must believe that PTC understands the aerospace and defense industry.

Similarly, PDM solution providers have begun to introduce applications designed for rapid implementation, including industry-vertical solutions as well as project management applications. Many vendors sell data management systems specifically targeted at particular industries. For instance UGS PLM offers separate Teamcenter modules for the aerospace, automotive, consumer products, and high-tech electronics markets, and each has found success in the marketplace because of their out-of-the-box set-up and intimate domain understanding. Additionally, vendors are providing "lighter" versions of their traditional PDM system to offer a less expensive, and sometimes function-specific, alternative.

## **We Do That Too**

Offering an alternative to traditional PDM systems, many niche-market solution providers have developed or acquired (or partnered with) data management functionality to complement their data-creation product suites. This is true in value-priced solids modeling, in CAE, and in digital manufacturing. In the value priced solids modeling domain, products are available to better manage and share CAD data on a project or team scale. In CAE, traditional PDM systems are inadequately equipped to handle both the complexity and sheer volume of the analysis data. As manufacturers increasingly turn their attention to synching design and manufacturing by digitizing the factory floor, new non-traditional production

information is created that must be managed. In fact, forward thinking organizations are taking this data and replicating facilities and production processes globally, underscoring the need for optimal data management strategies.

Mainstream/value-priced CAD software developers have begun offering data management and data sharing capabilities as an integral part of their solution suite. Often positioned as providing workgroup-oriented data management and control with far lower administrative overhead than large-scale PDM, these offerings generally can also be used in complement with the customer organization's enterprise PDM environment, where such need exists. [See also Daratech's August 2003 Industry Update "[Value Priced Wars Heating Up](#)"—Ed.]

Users of digital prototyping and simulation (CAE) solutions have repeatedly told Daratech that a major impediment to broader, more effectual use of this technology is the shortage of data management and process management tools designed specifically for CAE data. While PDM tools have become highly sophisticated in managing CAD assembly hierarchies, revision histories and associated workflows, users report that few if any offer substantive help in managing multiple iterations of analysis data, correlating analysis results with physical test data, and associating analysis and test data with CAD models in ways that let digital and physical prototyping have broader and deeper impact on product development. Consequently, a number of digital prototyping and simulation solution providers have begun fielding data management offerings specifically for digital prototyping and in some cases physical test data. [See also Daratech's Best Practices Report "*Digital Simulation to Meet Today's Product Development Challenges*" at

[http://www.daratech.com/best/digital\\_simulation.pdf](http://www.daratech.com/best/digital_simulation.pdf)—Ed.]

Similar to manufacturers' need for CAE-specific data management solutions is their need for solutions tailored to manage the data generated in digital manufacturing process engineering. Manufacturers are increasingly seeking digital solutions to help begin designing and optimizing production processes early in product design, to ensure that manufacturing engineering is not a time-to-market constraint, and also to help identify manufacturability issues early, when these may be addressable by modifying the design of the product. Consequently, a number of digital manufacturing process engineering solution providers are making data and process management offerings a central element of their solution suites.

Another area vendors and manufacturers alike are paying more and more attention to is digital mock-up (DMU). As a result of the growing deployment of 3D CAD data, manufacturers are employing DMU for assemblies, parts layout and interference checking and while some newer DMU technologies are able to dramatically reduce file size, in general, the file sizes associated with these assemblies are very large and complex. True, most PDM systems offer some form of DMU capabilities, but we believe this is an area that will see increased focus in the near future.

### **Not Yet Mature**

The IT industry changes so rapidly that no one can, today, say with any degree of certainty exactly what technologies will be available in five years' time. Users and vendors alike are still defining functionality and testing the limits of current and emerging Internet architecture and technologies, communications infrastructure and their own business processes.

With the industry intrinsically marked by technological innovation and market evolution, market maturity, we believe, is still a long way off. There appears to be ample opportunity for strong and profitable growth for both existing and new players. Acceptance and use of data management technology is undeniably spreading into entirely new markets and application areas, and its potential is being introduced to legions of new users.

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