

Competitive CAD Outlook

Drivers of CAD system migration

The war for a competitive advantage never ceases. Everyday companies make strategic business decisions to improve their position in the market. They examine the business value chain to improve product innovation, customer intimacy, and operational efficiency. For discrete manufacturers, product development is one of their key weapons in this war.

As a result, now more than ever, CAD tools should be perceived as strategic business weapons that add critical value to companies that learn how to leverage an engineer's creativity and translate it into corporate profits. These tools may have been dismissed in the past and companies moved on to pursue the Holy Grail of CRM, ERP, etc. Consequently, many CAD implementations have been left behind at the basic foundation level. The personal productivity of individual users has improved. However, companies did not fully implement new processes, and leveraged CAD tools to benefit specific business initiatives. Executives have forgotten the financial benefits of the basic engineering tool they use to create the best products – which, if implemented fully, affects the market share and the bottom line. Corporate leaders should be re-evaluating the CAD tools as the key to company competitiveness.

The business environment has changed significantly in the past 10 years. The rapid advances of the Internet added fuel to the fire of global competition. Many manufacturing companies are building 24/7 product design capabilities as they strive to drastically improve time to market. Mergers and acquisitions, and the resulting business consolidations, drive the reassessment of business processes, tools and applications. Today, product development process improvements focus on the entire value chain, not just inside a company's firewall. The demands of value chain collaboration require that participating companies use best in class, collaborative tools and practices to streamline internal and external processes to build the extra-enterprise, integrated product development environment that promotes participation. These factors put pressure on CAD tools to provide capabilities to help businesses develop critical capabilities necessary for the improvement of the product development value streams.

Fundamental Shifts in business strategy	
Paradigm for 1990s	Paradigm for 2000s
Efficiency, focus on cost reduction	Agility, focus on customer responsiveness
Mass production of goods	Mass customization of goods, services, and information
IT drives standardization	IT drives market differentiation
Minimum integration with the supply chain	Maximum integration with the supply chain

Source: The Gartner Group

Considerations and Opportunities

Start with business results

At the end of the day it is all about results. Outdated technology prevents companies from achieving the best possible results.

But acquiring the technology is only part of the solution. Other factors really drive the success: user motivation, adequate training, teamwork, and the key processes built around the new tools. Many businesses consider personal productivity factors, and pay much less attention to teamwork, data conversion, improved processes, or business results when selecting and implementing the new tools. This is short sighted – How many products do you know that are only developed by one person? New technology

implementations provide unique opportunities to re-think all of the success factors needed to achievement real business results

It is very important that business managers provide a business framework for technology investments. They must identify the needs and initiatives of the company and align them with the potential payback from technology implementation (e.g. entering new markets, improving current products, or optimizing for higher margins). These objectives must be clearly communicated to the implementation team.

Once the business objectives are clearly understood the appropriate metric and measurement system must be put in place to measure the progress of the implementation. The system must focus on measuring the factors that were deemed important while planning for the implementation. The measurement system must be relevant, in other words, tied to the current goals of the business and what is achievable with the new technology. Too often companies apply old measurements to new business paradigm, such as measuring the user productivity in “drawing area per hour” in the age of electronic media. Inappropriate metrics and measures impede rapid progress and the achievement of the expected ROI.

Consider key processes that will be affected

Beyond personal productivity, the selection and implementation team must identify implementation priorities based on process bottlenecks or constraints. It makes very little sense to train and develop new product design capabilities within your engineering department without considering how engineers are going to work together as a team, or where to best focus their efforts in order to meet the business goals.

The throughput of the entire system is minimized by constraints. These constraints could be physical-such as the lack of required tool functionality, limited communication bandwidth, outdated hardware, or non-physical-such as outdated processes, procedures, and policies. It is important to identify these constraints and consider them in deciding on priorities of the implementation. A good way of identifying system constraints is via cross-team discovery workshops, or theory-of-constraints studies.

Most processes or systems, including product development, have relatively few constraints. Improvement in just few key areas will dramatically improve the business throughput. Think of it this way. If you gain an hour of productivity on an activity, which is not on the critical path (i.e. not at the system constraint), the business extracts zero value from such advance. Conversely, if one hour of productivity is lost on the critical path, the entire system loses one hour of productivity.

The business constraints elimination approach allows companies to show results where they matter, in the business equation. These may include, faster access to growth markets, ability to grow market share versus competitors, ability to optimize products and processes for higher margins. When companies effectively benchmark improved processes at the system bottleneck level, and then leverage new technology in these key improvement areas, product development related business gains are immense.

Plan ahead, with software and hardware advances in mind

The total cost of ownership of new tools is relatively high. The purchase cost of the software or hardware is usually the cheapest part – so don’t be fooled by the initial purchase price – because the price you paid for it has no impact on the business results. Companies must consider the costs of retraining users, migrating design data, improving processes, etc. To help justify investment in the new technology, companies must have not only clear vision of targeted business results, but also the understanding of evolution of the technology. Recognition of important trends within this industry will accelerate the selection of the appropriate technology partner.

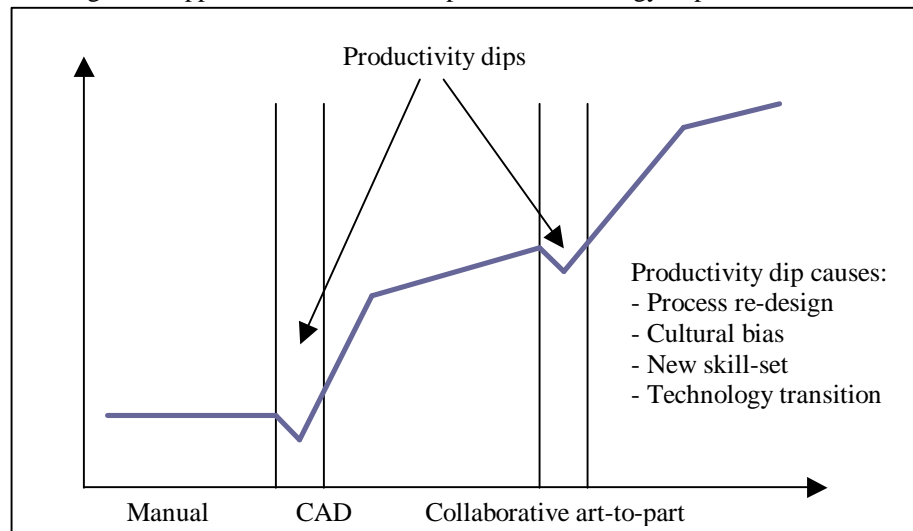
Companies should look beyond current features and functions of technologies and consider at least 2-3 year technology horizon. Typically, new software or architecture becomes a platform for the next 10 years of productivity improvement. Each new software generation elevates the level of product development complexity that can be managed. You should look for a technology partner that has a proven record of

product innovation. Best software companies not only improve current product features and functions, but also add a next generation functionality that becomes a foundation for the next productivity improvement curve. The history of consolidations in the CAD market should provide a clue as to potential partner stability and technology viability. Reviewing the current business trends, such as collaboration and mass customization (hot buttons in today's market), will help to identify vendors with the best product vision.

Consideration must be given to flexibility, openness, and Internet compatibility of the new technology. Design engineering processes are connected to the rest of the corporation, and so should be the tools. The ease of integration will be driven by exceptional up-front definition of affected processes as well as the technology connectivity standards and approach.

Minimize disruption to your product development during the transition

The Gartner Group suggests that product development productivity initially dips at the transition to new tools. Such a productivity discontinuity results from technology transition, changing skill sets, cultural biases, and simultaneous efforts to improve processes and practices. It is important to consider and build the transition management approaches into a roadmap for the technology implementation.



The implementation roadmap must consider all critical phases of the technology integration. From thorough planning, through the infrastructure setup, user training and motivation, project-based assistance, data management and migration, process definition and automation, to the solution-based implementation, all phases play an important role in managing the transition to more productive product development environments.

Companies should identify vendors that offer innovative, flexible training approaches that rapidly and completely engage the user community. Some technology vendors offer learning methods that combine elements of just-in-time training, with Web-based assessment and improvement tutorials. Such methods allow the user to receive an adequate amount of training according to their role in the product development process. The acquired knowledge is immediately put to use through the integrated project-based implementation approach.

Companies should seek out technology providers that offer solutions sets targeted at specific business problems and initiatives. Some vendors offer technology-based solutions to important business initiatives such as project collaboration, design-to-order, and modular design. Such solutions combine the elements of accelerated implementation with the focus on the achievement of dramatic business results.

Summary

With the current economic conditions, some companies may look to put off the migration of CAD tools this year. With the large number of consolidations in the industry, smart companies will be carefully reviewing their product development process with an eye to migration. Beyond the cost of the software, the businesses will invest in hardware, systems support, user training, set-up of new best practices and improvement of the design process. Tool migration decisions are becoming ever more important since companies tend to take more holistic approach to the technology implementation based on the past experience and new recommendations. Accordingly, tool selection and implementation decisions will be scrutinized by senior business managers, who will examine the importance of the new system to their competitive value chain. During the selection process companies should consider the business drivers, conduct a comprehensive review of factors that should be considered, and devise ways to jointly manage the technology migration in a way that will minimize the productivity dips and maximize the return on investment