

A Summary of TechniCom’s “Guide to Selecting a Mechanical CAD System for Small and Medium Businesses (SMB)”

A summary of the 21 page whitepaper by TechniCom

For more information about PTC, its offerings to small and medium sized businesses and for a full copy of this paper, contact PTC via its website at http://www.ptc.com/view?im_dbkey=107673

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Introduction

This paper is a follow on and update of TechniCom's previous paper published in February 2005. In that paper we discussed "Selecting a CAD/CAM/CAE/PDM system" and noted that selecting such a system is no easy task. Today, five years later it is still no easy task to select a comprehensive engineering and product development system, yet it is crucial to the success of ANY business, be it small or large.

Our goal with this paper is to help people make better decisions when selecting software solutions to improve product development and engineering performance. This paper can provide you with a logical and orderly approach, which, if followed, will allow you to select the proper 3D *mechanical* Computer Aided Design (CAD) system for your company. In this paper, different than many others we have seen, we provide guidance for mid-sized businesses rather than large-scale enterprises.

In many areas of this paper we stress the importance of making strategic decisions, both short-term and long-term. Readers should keep this in mind. Any decision making tool, be it for product development or business strategy, is only as good as long as it fits the company strategy and directions. We repeat, a tool that seems technologically advanced but does not fit the company needs cannot succeed. We will explore this further, a bit later.

This paper is sponsored (partially paid for) by PTC. Nevertheless, this paper is completely unbiased. PTC feels comfortable that small and medium business customers evaluating such systems will often decide upon PTC offerings, providing that customers have a rational approach to making such a decision. This paper provides such a rational approach. PTC and the authors know that no single solution is right for all customers.

Executive Summary

This paper defines a well thought out, logical and orderly process to select a new CAD system. We focus our energy in this report on the process of justifying a new system and making decisions based on business needs first, then developing the technical and functional requirements to support those business needs. The best we can do in a paper of this length is to provide overview guidance to customers making such a decision. Yet we have tried to distill our years of expertise into this paper. We hope you will find the methodologies presented by the author clear and usable.

First we discuss a CAD system, why it is important and why a company might consider switching to a new one. Then we launch into the how-to of going about the selection and many things to consider along the way.

Over the years, we have observed and been involved with the complexities of such a decision. We can only provide you with our sage advice and recommendations of a process to follow. It is up to you to work with our recommendations and bend them to fit your company. Notice I said, bend, not discard. We take you from the early decision stage, show you how to get started in organizing for the process, and guide you through the various stages.

The process follows a suggested path to develop requirements in order to judge the software that best fits your needs. We suggest the development of management requirements, leading to functional

This summary is an abbreviated version of the 21 page whitepaper. See the link to PTC (the papers sponsor) on the title page for your own free copy of the complete paper.

requirements, then to technical requirements, and give guidance on how to work with vendors to make the final decision. We conclude with advice on what such a system should cost and some suggestions for implementation. The appendix contains some interesting advice on a technique for evaluating vendor proposals.

Good luck with your decision and remember, "Fortune usually smiles on the well prepared."

The Selection Process

Defining a CAD system

For the purpose of this discussion, a CAD system shall include 3D and 2D design, inherent analysis, connection to specialized analysis, an integrated CAM system, and a workgroup product data management (PDM) system.

If your funding and business objectives are primarily engineering driven, then you should give more weight to CAD. If your company intends to perform less direct engineering and instead make more use of design partners and outsourcing, then you might want to consider a solution that is lighter on CAD and more focused on collaboration using a PLM solution.

For the purposes of this paper, we assume the reader's objectives are primarily engineering driven and thus in need of a CAD system.

Why consider a new CAD system?

If a CAD system is integral to your company's future product development, then a careful rational decision must be made that does its utmost to insure that such a system meets both your current and future needs.

As a consultant who has observed and been involved with many such decisions, I can assure you that selecting a CAD system for small businesses is a difficult process. The bigger and more complicated the company, the more difficult it seems to be. Why is that the case? **Because a mechanical CAD system is the most important tool of product development.** Notice that I said a tool -- this is important. It is a tool, but only a tool. A business must focus on its business; it needs to determine what the proper business process is. Then it must consider the tool to meet the process and requirements. It's not about strategy; it's about the business of running the business. **A well-implemented tool will support the business plans. This is the fundamental message of this paper.**

In the last decade many forces have changed the way we need to work today. Among these are the need for speed in bringing products to market; the need for world class quality; the requirement to operate in a global economy where customers, vendors, and even engineering can be anywhere in the world; and cost - where customers can compare prices anywhere in the world by simply browsing the Internet.

A mechanical CAD system is the most important tool of product development.

In many cases, selecting a PLM system tends to be done at too low a level, with poor consideration of company strategic issues, with little understanding of the product development environment and any proposed improvement, and with little idea of expected ROI or metrics. Is this a problem? Yes! If such a system is integral to your company's future product development, then a careful rational decision must be made that does its utmost to ensure that such a system meets both your current and future needs.

It all starts with the business objectives in mind, starting with a determination of whether a new system is warranted or not. This encourages a business case that carefully ties the software strategy to the strategy of the business as a whole. **Without this business alignment, the selection process will likely be focused**

strictly on the technical merits of the software system and disregard evaluation criteria that are critical to the successful implementation (and return on investment) of the PLM solution.

After determining the need and building the business case for the new solution, the author recommends a number of steps to organize and conduct the evaluation process. Assembling the proper team for the selection is an important step, including the development of a cross-functional team and an executive steering committee to drive the process. This team will quantify the company management requirements, functional requirements, technical requirements, and integration requirements. Then this team will drive the process to select a vendor partner and a solution based on these requirements.

*Properly implemented, a CAD system **supports** the business plans.*

The paper further identifies a process to evaluate potential vendor partners, including the importance of the vendors' long-term strategy in addition to current offerings. The evaluation should include an assessment of the vendor's ability to support the company during the implementation and beyond, including an understanding of design strategy of the company and the ecosystem of partners and solutions that are aligned with the potential software vendor. Finally, the paper identifies a number of potential solution providers and offers some advice on how much a company should plan to spend on a solution of this kind to help ensure a realistic cost for the business case.

A multi-step approach to the selection process builds on our logical and successful recommendations in the past:

- Determine the need
- Assess the as-is system and the business objectives for the to-be system
- Organize the evaluation
- Determine management requirements
- Determine functional requirements
- Determine technical requirements
- Determine integration requirements
- Evaluate a potential vendor partner
- Select a system and vendor partner
- Implement and monitor the strategy

If a modern CAD system is integral to your company's future product development, then a careful rational decision must be made that does its utmost to insure that such a system meets both your current and future needs.

A CAD system can provide a tremendous boost to the business. These steps ensure that the system achieves your desired goals!

These are explained in more detail in the complete paper.

Today's computer and networking technology allows CAD systems to reach into and improve many more operations such as speed in bringing products to market; world class quality; requirements to operate in a global economy where customers, vendors, and even engineering can be anywhere in the world; and cost, where customers can compare prices anywhere in the world by simply browsing the Internet.

Ask yourself a few questions:

- When did you last make a major change or update to your CAD software? Was it within the last 3 -5 years?
- Are your engineers/designers primarily designing using 3D?
- If you are an engineer to order (ETO) or make to order (MTO) company, are you using automated product configurators or automated design software?
- Are you happy with your product quality?

Aligning the selection process to the business needs will avoid focusing strictly on the technical merits of the software system.

About the Author

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Raymond Kurland is president of TechniCom Group LLC and its principal consultant and editor. His firm, founded in 1989, specializes in analyzing MCAD and PLM systems and has been involved in reviewing and comparing such software since 1987. Ray frequently consults with both vendors and users. Ray has degrees in Engineering from Rutgers University and from NYU. His career included stints with Bell Telephone Laboratories, IBM, and Dassault Systemes. Ray can be reached at rayk@technicom.com.

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- Do you spend a lot of time and money producing physical prototypes?
- Is your engineering design cycle short enough?
- Are your engineering methods captured to insulate your development department from future turnover?
- Can your design management easily evaluate progress on key projects?
- Can you easily coordinate a global development effort?
- Are you happy with your product development times and the time it takes to bring products to market?
- Do you respond to a high percentage of RFP's in a timely fashion?
- Are your development and go-to-market costs in line with your competitors?
- Are you able to interact with global suppliers in the design phase as well as you should?
- If need be, can you exchange design data with your customers and/or suppliers? In this exchange, can you retain the security of intellectual property on your key product data?
- Are your engineering and manufacturing bills of material kept synchronized?
- Can you effectively access and use portions of prior designs in new products or projects?
- Do your overall product related company metrics compare favorably with others in your industry?

If you answered "No" to **any** of these questions you are operating with a deficient CAD or product development system.

Please refer to the full paper on how and why to proceed.
