Q&A: The Future Of CAD

Mike Campbell, General Manager, CAD for PTC recently spoke to Manufacturing Business Technology about how CAD technology is changing, how companies are taking advantage of new technology, and some of the latest trends related to CAD.

***MBT:* Can you tell me where CAD is at right now and some general trends you see for the future?**

Campbell: CAD is a very mature tool these days. The idea of 3D CAD has been around for two-and-a-half decades. A lot of companies have already moved to 3D CAD, and most of our customers are already using a 3D definition of the design as sort of a virtual prototype. What I see happening today is an effort to get more and more people to be able participate in either the definition or the consumption of that rich, digital definition. That's a big part of what's going on, and that manifests itself in a variety of different ways.

We see a desire for more access of the information. A lot of people are interested in just being able to access the data, and access it in lots of different places. Certainly there is an increasing trend toward mobile access, so that people who are on the shop floor, people that are out with a customer, or elsewhere can participate in the product development process and have good tools to access and interact with rich 3D CAD data.

A corollary of that trend is sort of allowing people to contribute to the definition of CAD data. It used to be that there were dedicated CAD professionals that were essentially CAD jockeys. They weren't really engineers. They were modelers. Today, we see companies looking to have more people involved in that activity. This idea of specialization as it relates to being a CAD modeler is waning. That manifests itself in a variety of ways. It manifests itself in cheaper products that are less functional and less sophisticated. They are more affordable products. It also manifests itself in different modeling paradigms. For a long time it was a parametric, 3D CAD world. What we're seeing today is more and more people interested in people viewing the geometry, and more and more people being interested in making simple modifications directly on the geometry using this direct modeling paradigm. It is really becoming more prevalent these days. Those are some of the bigger trends, and you could sort of summarize that by characterizing that as more people wanting to be involved with CAD in more different places.

***MBT:* Cost is a significant factor when it comes to companies looking at new technology and new ways of doing things. Are companies finding it cost effective to invest in new CAD offerings – whether they are large or small outfits?**

Campbell: It's really all about what the value is. Just having a discussion around price is a hard conversation to have if you can't talk about what the benefits are.

For example, take less re-work. If you can go and explain to somebody the latest technology and having access to rich, 3D digital definitions, how does that reduce my errors? How does that allow me to get the product out faster because I'm not reworking it? How does it allow me to get the product out with less cost because I'm not spending money on physical prototypes? How does it allow me to gain more market share by getting the product out quicker and beginning to realize the return on investment I made in the R&D of this product? In situations where we can have discussions on the value, these new technologies can deliver. That message resonates with all kinds of organizations. Anybody that's trying to be more efficient, anybody that's trying to be more profitable, that message resonates. That's really what's driving the application of these technologies. Technology for technology's sake really isn't that interesting. Technology where we can apply it and generate real value, anytime we can have that kind of conversation, that appeals to various sizes of companies and various disciplines.

***MBT:* What are some of the questions manufacturers have when they come to you and look at new CAD technology? How do you answer them?**

Campbell: The most prevalent question is "How quickly can I begin to realize that value?" Having a message around not only delivering technology, not only educating them on how to change their process, but giving them some confidence around the ability to actually adopt the stuff and deploy the stuff and to begin to reap the rewards. Companies aren't interested in, say, big-bang ERP like they were 10-15 years ago. People would spend tens of millions of dollars on projects and wait many, many years to plug in those systems. Nobody has an appetite for that today. People want to be assured that they will be able to choose a tool and that tool is going to combine with process change and make a quick impact on their business. I spend a lot of my time ensuring companies that there is a fast time to value, that the product and the technology is easy to learn, it's easy to use, that your previous investment may be in various other CAD systems or even PTC CAD systems. All of those investments are protected and you can leverage that legacy data and get up to speed, get running and get moving. That's what a lot of the pressure is around today. As companies struggle for increasing overall efficiency and maximizing that value. That's what it is all about, and that's the most recurring theme.

***MBT:* What has you excited about the future of CAD technology?**

Campbell: There's a lot going on. The user experience of working with a CAD tool today and the user experience we envision in the future are certainly very exciting. When we think about the expectation that people have for dealing with the software, it is so different today than it was 10 years ago. People were willing to put up with a week of training to get ramped up on how to use a CAD system. Today, people are used to downloading an app and being off and running within 10 minutes. We need to meet those expectations, and I think we are meeting those expectations through improvements in user interface, user interface technology, but also the hardware systems themselves, mobile devices, touch devices and all kinds of new input devices. We're no longer tied to the keyboard and the mouse.

That all is helping drive this democratization of CAD, lowering the barrier to entry,

providing a scalable suite of tools that allow for sometimes free or very affordable entry-level points, so that people can begin working with this stuff.

Then there's the hardware itself. The machines that are available today and the compute power in my Dell laptop sitting on my desk is phenomenal compared to the Unix machines that high-end CAD used to need to run on 10-15 years ago. As that trend continues, more compute power shows up, and the software begins to take advantage, the experience of working with realistically-rendered and complicated design just becomes a more natural expectation.

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