



# Is your engineering department automated?

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As I fly at 30,000 feet across the Pacific on my 10-hour commute to Korea, I'm left with a lot of time to read and ponder questions about life and work. I was reading a Thomas H. Davenport book: "Thinking for a Living" and it got me thinking.

Davenport argues that knowledge workers have often been able to resist the structuring of their work. The reason they try to fight is that they fear a loss of autonomy in performing their work.

This struck a familiar chord with me, and took me back to my early CAD/CAM system implementation days. Then, (and perhaps still today) CAD/CAM systems were perceived to be the panacea to all our engineering productivity ills.

Organizations were making tremendous investments in CAD/CAM systems and they spent millions of dollars to improve engineering productivity. Management at that time believed that getting a drawing out faster was equivalent to greater productivity. I watched as executives marveled at the latest system by the next greatest CAD/CAM company.

I noticed a strange phenomenon while working to implement systems in those days. There were two camps of people — those that embraced technological change and those that fought it tooth and nail. The challenges I faced in my assignments were dealing with issues that both camps were trying to resolve from different perspectives. One such example is from my days working for Lockheed's famed Skunk Works projects. Ben Rich and Kelly Johnson were key members of the famed group that developed highly specialized aircraft in secrecy for the U.S. military.

After a few years working in the wilds of Ontario, Calif. establishing a remote CAD/CAM facility Ben, some of his apostles and I had an opportunity to discuss our views on engineering technology during a visit to my little outpost.

What surprised Ben was that our facility that supported 50 design engineers, 10 manufacturing engineers and a few stray manufacturing types was supported by two and a half people, with more capabilities and better response time than his 500 plus facility in Burbank, Calif. During the rest of the day Ben's team poked and prodded, questioned everyone, and generally stuck their nose into everything they could find to see how this could happen. At the end of the day the IT support staff on his team could find nothing

special about this little facility that could render it so productive. His engineering staff was curious about how we did it based upon this assessment.

His team members started asking questions about how we could generate better productivity from our engineers. “We’ve got the same CAD/CAM equipment, the same ratio of engineers to terminals, computer scripts, etc. What makes this so different?” they wondered. My answer surprised them. I told them I set up the systems so they wouldn’t need an IT department to run it day to day.

Prior to installing the equipment, I spent weeks understanding the workflow of this engineering department and how the technology could change it for the better before I installed and customized the system. The end result of all this fact finding and following people around on how they did their job and would like to do it in the future was a process map.

This map was nothing as sophisticated as what I do for large corporations and companies today, but it was enough to show engineers, business and engineering management just how the system of CAD/CAM equipment, procedures, conventions and the people themselves would improve the overall quality, speed and profitability of the organization. Initially, most of the executive management at the facility thought the technology couldn’t be applied there as they were a custom shop and as everyone knows CAD/CAM is for mass production shops.

The team seemed a bit surprised that I put all this effort behind installing a system; after all I was a contractor and working for the IT department to boot. I explained to them my background in the design field then somehow it made sense to them.

I had created a set of simple menu and command scripts that enabled an engineer to control his or her working environment without having to call a system programmer in. If you wanted to electronically send a drawing from Ontario to another Lockheed facility, you simply put it into a directory, selected a destination from the menu, added a name and off it went. If you wanted to plot a drawing, you selected the plotter you wanted to use and bingo off it went. If you needed to recover an old drawing or a backup from yesterday, you selected the time period, viewed the listing, selected the files you wanted and asked the system to restore from the automated daily backup.

Basically, day to day operations were placed in the hands of those who do the work. This simple rule drove the shape of the system as well as the technology deployed.

I bring this old story up to illustrate a point on a simple truth about technology. Many of the cool ideas and stuff that surrounds us now can produce amazing increases in productivity, but not without some intelligence put behind it in implementing it. The question I have for you this month is have you computerized, automated or enhanced your engineering department?

**Originally Published in Advanced Manufacturing Magazine September, 2006**