Graphical simulation and the PC revolution

BY PAUL FREEDMAN, SIMLOG

Just about 10 years ago, I began working in the area of graphical simulation for operator training, at one of Canada's leading computer science research institute. And at the time, it took a $50,000 graphics workstation to get going. Ten years later, Wal-Mart is selling laptops for under $500 that do so much more than that workstation ever did.

Well, what does all this mean for simulatio and the crane industry?

Thanks to the combination of improved functionality and decreased prices, simulator companies can now obtain adequate computing and graphics performance from either off-the-shelf or slightly customized PCs, to help bring simulator prices down. Even the biggest players in the flight simulator world today now use ATI or Nvidia components.

But at Simlog, we've gone one step further than anyone else, by creating training simulator ingredients to be used with your own PC. And we can do that because we can count on our customer to have much the same kind of PC all around the world: powerful (but affordable!) hardware with ATI or Nvidia chipsets; the Windows operating system, and USB port connectivity.

Indeed, many of our customers are using laptop PCs, and small projectors, to create simulator "stations" that are extremely portable. Of course, low cost also means that for the first time, the same customer can deploy many simulator stations so that many people can be training at the same time, sometimes in different places. Already, some of our leading customers have created simulator labs with four or even eight stations, each equipped with a desktop or laptop PC.

But managing simulator-based training help means more than just simulation per se, and that's why simulator products of all kinds typically feature a database to associate unique login names and passwords with simulator users, and save all simulation results together (indexed by user).

Well, at Simlog, we've gone one step further once again by creating database support in the form of another simulator ingredient, a "helper product" that can be used with networked training stations. In this way, whether I sit down at simulator number one or simulator number eight, so long as the simulator PCs are all connected via a local area network, they share the very same simulator database.

What's on the horizon? Well, there's no immediate end in sight to the PC evolution, as more and more computing and graphics performance becomes increasingly affordable. And that means that the sophistication of simulation software can improve, with better three-dimensional modeling and better "physics" that together will create more training value to the customer.

In fact, in the limit, we could build something like a crane flight simulator that would mimic in every imaginable way what a crane might do on a job site. Indeed, some people have suggested to us that with the right crane flight simulator, we could even forgo time at the controls of real cranes, for example, to certify crane operators. After all, this is what we do already with pilots and air traffic controllers.

Well, I like to say that no one's going to pay me to do simulated crane work. And no one's going to hire me based on how well I can operate a simulated crane, that's because the only kind of performance that really counts in the crane industry is the kind from inside the cab. And that means that simulators can never be more than just stepping stones to help people do better at the controls of real cranes on real job sites. **CW**

Paul Freedman has been working with computers, control systems, and simulators for over 25 years, and holds degrees in engineering physics and electrical engineering. He is a registered professional engineer in the Province of Quebec. Since 1999, he has led Simlog efforts as president and co-founder to develop new, "Personal Simulators" for operators of heavy equipment in forestry, mining, and construction.