Getting Down to Business

by Lori Brandt

Platforms based on gaming technology like those developed by Walt Scacchi's research team can train personnel and improve business performance. Opposite: Semiconductor technicians consult in FabLab screen shot.

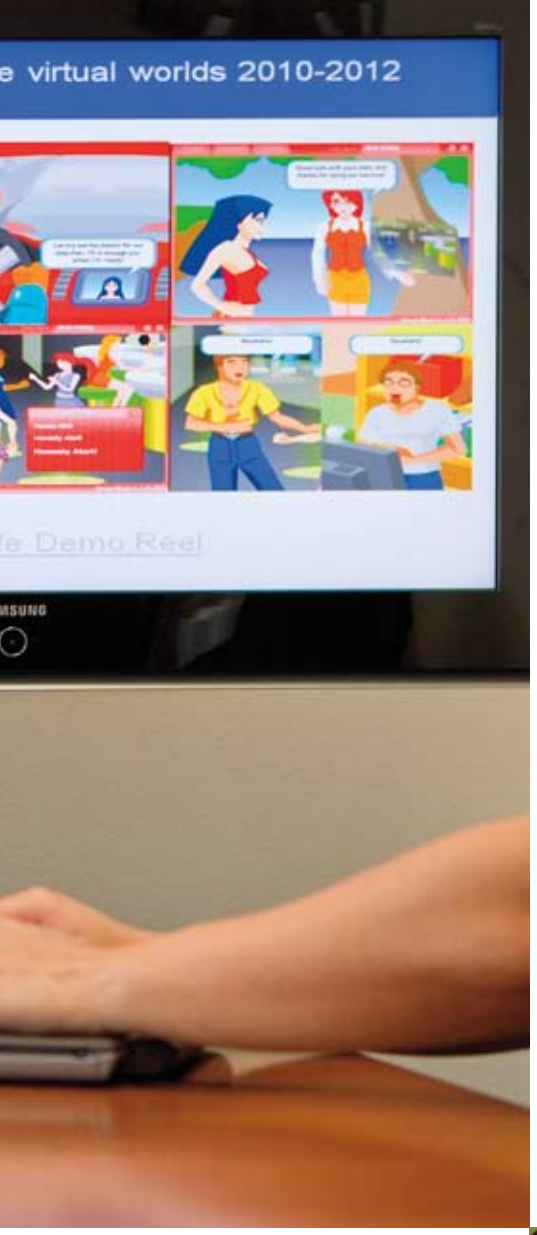
Think playing computer games at work can get you fired? Not necessarily. As more businesses look to computer game and virtual world technology to help them solve problems, improve collaboration, train workers and compete in a global economy, the line between work and play is fading.

"Game software has improved dramatically over the years, and business applications of these technologies have the potential to improve performance," says Vijay Gurbaxani, a UCI professor of information systems and director of the Center for Research on Information Technology and Organizations. "But it is important to understand the conditions under which the use of these technologies is more likely to succeed."

That is the goal of the recent $3 million National Science Foundation grant to UCI's Institute for Software Research: to see how the emerging forms of communication that employ computer-game and virtual-world technology can best help organizations, as well as determine when this technology may not be an effective solution.

Not Just Fun and Games

One such organization working with Calit2 researchers is the technology innovator Intel. For a high-tech company like Intel, which builds microprocessors, one small accident in its manufacturing plant could suspend production for hours or even days. A shutdown costs hundreds of thousands of dollars an



hour. With 3,500 technicians who cover three shifts a day, Intel's $3-billion fabrication facility in Chandler, Ariz., consists of large, sterile clean-room environments. Training employees to deal with spills or service-equipment problems in this environment poses an expensive and difficult challenge. These workers must learn to diagnose and fix problems on the job as they occur.

"This presents the ideal situation for game-based virtual world technology," explains Walt Scacchi, ISR senior research scientist and co-director of the Calit2 Game Lab. As a demonstration of game technology's potential, Scacchi and computer programmer Craig Brown designed what they call the "FabLab" game. In this game, semiconductor manufacturing technicians, fully suited in clean-room attire with hood and facemask, perform their work activities, including diagnosing and resolving material spills that contaminate the clean room. The game shows how such breakdowns in operations can be modeled and collaboratively diagnosed at a distance, as well as how the game could be used to train new technicians.

The Future is Now

Northrop Grumman is another company working with UCI researchers. As a recruitment tool on college campuses, the aerospace company uses a short video game that lets potential employees practice their top-level engineering skills and build a fighter jet. The company is also developing a game for its current workforce to reinforce the notion that every job contributes to the quality and success of the final product.

Mark Conger is a project manager at Northrop Grumman who oversees the application of game technologies in the company's aerospace sector. "At Northrop Grumman, much of our research and development can take 10-plus years to go from concept to war fighter. If you think about that, our future customers and employees are in junior high right now. Rather than building our father's system, we need to figure out, right now, how to inject the technology these kids are used to into our product line, so that it makes sense when they are decision-makers or employees."

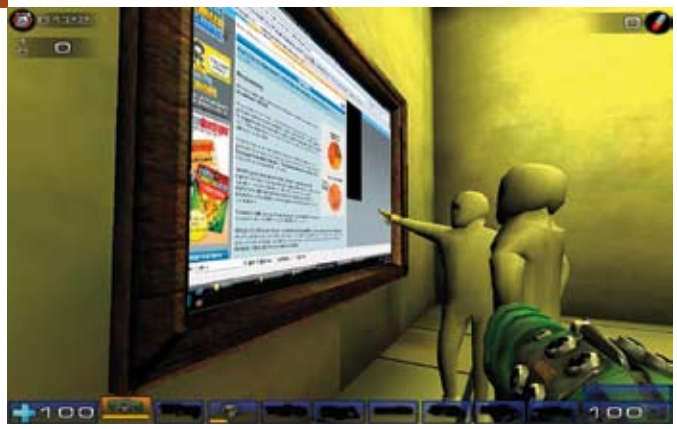
For Northrop Grumman, researchers are developing different virtual worlds and online game concepts to study how people behave – how they make decisions, how they do business, how they relate to one another. "These virtual-world gathering places are like vast social science Petri dishes," says Conger. "It's the first time in history we can capture this many people in one sample to do research."

Productive Play

Scacchi says computer-game and virtual-world technology can improve processes and practices in four areas. Exchanging information: think of a three-dimensional virtual conference or meeting, each person interacting with others through their avatar. Interactive design prototyping will allow engineers in different locations to collaboratively create products in real time. Simulation-based learning can be used to train employees, and virtual product showrooms could help sell products.

Scacchi believes that as the new medium of the 21st century, game technology will affect all modes of work and play, just as radio, television and the Internet did in the 20th century.

"Maybe there is no fundamental difference between work and play," says Scacchi. "Playing a complex, difficult computer game like "World of Warcraft" can be serious work. And people say the more challenging the game is to play, the more fun it is. So rather than thinking computer-game and virtual-world technology only applies to play, we view it as an activity system – an interactive activity system that can be used in many new ways to benefit corporate enterprise."



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