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Gaming Technology And Business IT Begin To Meld

The two worlds have a lot to learn from each other as businesses try to make applications more fun, and game developers learn how to manage large projects.

By Thomas Claburn, [InformationWeek](#)

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Games are serious business, and business is a serious game. There's always been some crossover between frivolous entertainment and cutthroat commerce, but advances in user interfaces, graphics, interactivity, and visualization technologies, as well as the need to manage the complexities of modern game development, have brought the two worlds together.

Businesspeople and entertainers have a lot to learn from each other. "It goes both ways," says Edward Castronova, an associate professor of telecommunications at Indiana University who studies the video game industry. Not only is the industry maturing and adopting the tools and techniques of software development from the business world, he says, but insights from gaming and virtual worlds are changing business.

Game companies, says Castronova, have figured out how to entertain people when what they're doing looks tedious. "A lot of times, the things that gamers do, when you look over their shoulders, look like rote work, pushing the same sequence of buttons 10,000 times," he says.



Game playing in the Army

In other words, playing games often looks a lot like office work. But unlike gamers, office workers are seldom found hunched over their keyboards at 3 a.m., too engrossed to log off. Businesses could benefit if they find ways to use game technology to make repetitive work more entertaining, whether it's by introducing a more interactive way of accomplishing tasks or adding a competitive element to work.

The eroding distinction between work and play reflects the reality that, these days, work happens at the office--and everywhere else, too. It also reflects the expectations of a generation of workers that grew up with computer games. The changing demographics of the workplace are increasing the role of game technology in business, says David Milliken, founder of Blueline Simulations, a research firm focused on corporate gaming and a reseller of business-oriented simulations.

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Bland, menu-driven training simulations have long been a part of computerized workplaces. But such tools are too simple today, Milliken argues. "If you grew up playing The Sims, that's not going to be enough for you," he says.

Play To Learn

Many of the lessons from gaming have shown up first in training and E-learning applications, says Bjorn Billhardt, CEO of E-learning vendor Enspire Learning. Companies initially saw learning-oriented simulations as a way to cut the cost of classroom teaching. But while costs dropped, so did retention of the information being taught. E-learning, essentially, was a bore. "Games and simulations are a way to better engage people," Billhardt says. (See "[Gap Embraces E-Learning](#)".) Enspire develops E-learning programs for businesses and lists several dozen companies as clients. One program, called Executive Challenge, places managers in teams and gives them a virtual company to lead. Players are promoted and demoted based on the decisions they make, and they're tested on leadership skills, teamwork, and their ability to make the company successful.

While the business world has only just begun to think about engaging the 36-and-under set, Milliken says the military is investing heavily in games. That makes sense, given that the typical recruit is a teenager.

The U.S. Army distributes a game called America's Army, an adaptation of the first-person-shooter genre typified by games such as Doom and Quake, which emphasizes teamwork and Army mores. America's Army places the players in combat situations so they "can get a firsthand look at what it is like to be a soldier," as the game's Web site says.

Last year, Sandia National Laboratories, in conjunction with the government application team of America's Army and parts of the military, created the Adaptive Thinking and Leadership simulation for the U.S. Army Special Forces using the America's Army game platform. The simulation takes a much more businesslike approach to warfare in that it focuses on negotiation and conflict resolution rather than running with a gun.

"It's not a shoot-'em-up," says Elaine Raybourn, a research scientist at Sandia National Laboratories and project lead for the Adaptive Thinking and Leadership simulation. "What we're doing is a nonviolent application where they're practicing their negotiation skills and interpersonal rapport building in a gaming environment."

Such an approach could be useful to business executives, but there aren't many specific examples to point to. IBM says it has implemented "game/play thinking" on a few projects, but doesn't have customers willing to talk.

Health care organizations already are ahead in using gaming technology. The first Games for Health Conference was held in 2004 to look at how games and game technologies could address health concerns. Now the health care industry's gaming efforts are beginning to help people. In early April, HopeLab, a health care research nonprofit, released Re-Mission, a PC-based video game that's available free to young people with cancer.



The first-person, shooter-style game involves destroying cancerous cells on screen, an act that helps patients understand and visualize the chemical action going on in their bodies. A recent study of 375 teens demonstrates that playing the game improves clinical outcomes, according to HopeLab.

America's Army puts warfare in a box.

Business and gaming also come together at PriSim Business War Games, which offers "war-gaming, but for training purposes," says David Semb, a partner at the company. PriSim runs competitive business simulations for large companies such as Chubb, Raytheon, and Washington Mutual. In classes of 25 to 40 people, PriSim lets competing teams of business managers manage a simulated business for practice and profit. They make decisions about marketing, staffing, and products, as they would in their real-world jobs.

There are other examples: In 2003, Michigan State University Extension's Family Nutrition Program and the MSU Communication Technology Laboratory developed a CD called The Fantastic Food Challenge that contains four games designed to teach young people and federal recipients of food stamps about nutrition and food. It sells for \$4, and so far 35,000 copies have been sold. But compared with top-selling entertainment titles, these games are technically unsophisticated. For advanced game technology, the military leads the way.

Last summer, simulation software company BreakAway said that it had been awarded a \$4.3 million federal grant from the Department of the Navy's Office of Naval Research to develop Pulse, an immersive 3-D virtual learning environment for health care professionals. The company, working with Texas A&M University-Corpus Christi, plans to complete the first phase of the game this September.

"What gaming technologies are bringing to the table are visualization environments," Raybourn says, noting that the ability to work with others in a game allows for a much more interactive, immersive experience. That's something any organization would welcome, whether it calls the recipient of that experience a recruit, a player, or a customer.

Delivering that experience has become increasingly challenging. Despite the fact that business IT often appears to be behind the curve, particularly in light of the rapid pace of Internet-related software development, the creators of tomorrow's cutting-edge consumer games are taking a page from enterprise developers as the complexity of game development drives adoption of middleware.

The Middleware Factor

At the Game Developers Conference in San Jose, Calif., in March, middleware was everywhere. It's not the sort of software that links applications together, which is what IT managers think of when they hear the word. Instead, gaming middleware eliminates the need to reinvent or write basic functions that each game needs. There were companies selling graphics engines, network engines, and systems for generating crowd behavior, physics, and foliage; for measuring player usage metrics; and for managing in-game advertising. The availability of this kind of software lets game developers focus on story lines and characters and spend less time on basic things that they can buy from another company.

"Middleware is almost like a democratization of the technology," says Michael Arrington, an analyst with the Acacia Research Group, a market research firm for entertainment technology. Though the game industry still reveres its technical visionaries like Doom creator John Carmack, programming genius matters less when competently crafted code can be bought by the box.

Or by the company. In July 2004, Electronic Arts, among the largest U.S. video game companies, acquired Criterion Software, a British game developer and maker of a popular middleware package called RenderWare. At the time, Electronic Arts said it "places a strategic priority on creating games with a set of tools and libraries that are shared among its studios. RenderWare and RenderWare4--currently under development for next-generation consoles--will be combined with EA's technology to create a common framework for development."

Frameworks are becoming necessary. "These games are getting so big and complicated that the lone visionary doesn't do it anymore," says John Austin, COO of game middleware maker Emergent Game Technologies. Not coincidentally, Emergent has an answer to this problem: Emergent Elements, new modular game development software for the creation of 3-D graphics with realistic physics, the analysis of live game data metrics, and automated management of development processes.

There are a number of reasons such tools are finding favor: the introduction of new multicore, multithreaded processors, which are more complicated to program; the growing number of gaming platforms, particularly mobile phones; efforts to integrate advertising into gaming, an additional source of complexity; the popularity of multiplayer virtual worlds that require massive server infrastructure; and the efforts to develop reusable gaming architectures that can deliver multiple related titles and more predictable profits.

Complications And Costs

Game companies, says IBM Fellow Grady Booch, are discovering that the ability to build software effectively can make a big difference in the marketplace. "It used to be in the gaming market that you'd hire great people, create some great ideas, get some great artists, launch a game, and you could make some real money and some real impact," he says. "These days, the entry costs of building a game are much higher."

That essentially was Microsoft's point when at the Game Developers Conference it introduced a pre-release version of its XNA Studio tools and debuted the XNA Framework--development tools for its Xbox 360--to help developers who face "escalating game development costs, expanding teams, and ever more complex hardware technologies," as a company press release put it.

Games are 10 times more complicated and costly to produce than they were in 1994, says Geoffrey Selzer, Emergent's CEO. Middleware to better manage developers, dollars, and details can save 20% to 40% in labor costs, he says.

Top game titles can take up to three years to develop and cost up to \$25 million--and may still bomb in retail, says Forrester analyst Paul Jackson. "So anything which mitigates risk, reduces turnaround time, and raises quality has to be good," he says.

Such sprawling development projects are where analyst Arrington sees enterprise IT methods having the most impact.



IBM knows something about that. At the Game Developers Conference, the longtime standard-bearer for enterprise computing said that it had reached agreements with several game and animation companies to provide software and services "to help game companies manage their game environment, reduce expenses, increase efficiency, and generate more revenue." IBM has been involved with the game industry for about five

Enspire lets you run a company but will you learn something, too?

years.

Hoplon Infotainment, in Brazil, turned to IBM to provide mainframe-based hosting for its upcoming game TaikoDom. It's also using IBM Rational Software Development Platform to manage the game's development with workflow management, automated code-testing tools, and asset tracking.

Jackson suggests that middleware has migrated from the business world to gaming because the problems faced by online game companies are similar to general E-commerce concerns such as security, real-time transactions, network communication, and database access. "Although many of the able middleware products like physics and graphics engines are unique to games, several others are merely addressing issues similar to business applications," he argues.

Last August, Acacia issued a report that predicted the game middleware industry would triple from \$149 million to around \$430 million by 2010. The research group suggests that the growth of mobile phones as a gaming platform, along with interactive television and IPTV, will make middleware more appealing to developers as a means to port their games to different environments.

The question is whether games will make companies more productive. Indiana University's Castronova believes they will. "Games get big teams of people to coordinate on things and have a good time on big long-term projects like hunting dragons," he says, adding that game quests, like business projects, require advanced planning and teamwork. "There's this sort of supply chain that happens, and it culminates in a dragon raid. That's a product mentality. That's something that line managers could ultimately use. And that's the way it's going to transform business."

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