

Defense Dept. Shifts Course In Procurement of Simulations

BY SANDRA I. ERWIN

Pentagon officials are rethinking their approach to managing war-gaming simulation programs in a move to avoid costly missteps that led to the cancellation of a billion-dollar project a year ago.

At issue is the need to provide officers with better simulations for battle-command and other forms of leadership training.

Although each service owns an extensive array of computer war-gaming systems, the Defense Department has been pushing them to consolidate their simulations into a "joint" rather than service-specific setup.

In 1994, the Pentagon launched the Joint Simulation System program, which was aimed at combining land, air and maritime simulations into a single digital environment. A decade, and a billion dollars later, JSIMS failed to accomplish that goal. The program was plagued by cost overruns, delays and overall poor performance. Its funding stream dried up in 2004.

Officials at the office of the secretary of defense were directed more than a year ago to assess the state of the technology and report back with recommendations on how the Defense Department should fund and manage joint simulations programs. The study, titled, "Training Capabilities Analysis of Alternatives," was completed in August. It concluded that, rather than start a new program to replace JSIMS, the Defense Department should backtrack and reassess its requirements for joint-simulation systems.

The report noted: "Improving joint training is a complex problem, and all issues could not be resolved within the time and resources allotted for conducting the training capabilities analysis of alternatives."

Representatives from the office of the deputy undersecretary of defense for readiness, Paul Mayberry, and officials from U.S. Joint Forces Command were in charge of the study. The goal was to make an "assessment of joint service training with an eye to coming up with cost effective methods to accomplish that training," said Fred Hartman, one of the study's directors.

"The nature of our study changed from what people had anticipated—go back and figure out how to do another JSIMS program—to wisely take a step back and look at training on a larger perspective, try to find cost effective methods to solve the current gaps in training," Hartman told National Defense.

Joint simulations are not as complex from a technology standpoint as they are difficult to manage and oversee, the study concluded.

JSIMS serves as a cautionary tale, Hartman said. "It became a large integration effort that exceeded our technical expectations." By the time the program was cancelled, engineers were trying to link more than 30 different families of simulations that had not been

Soldiers learn to fire an anti-tank weapon with the Engagement Skills Trainer. (U.S. Army photo)



designed to be interoperable.

"Interfacing complex simulations of this type is very challenging. You have many entities that have to operate in a single simulation," said Alfred Ferrari, vice president of Northrop Grumman technical services unit.

Despite the demise of JSIMS, he said, the Defense Department will continue to focus on joint simulations. But no matter how the Pentagon decides to go about buying new technologies, future systems will be based largely on existing "legacy" simulations and will require the integration of disparate elements into a single network.

JSIMS was a "management nightmare ... with lots of chiefs and no one in total control of the program," said Daniel E. Gardner, director of readiness and training policy at the Defense Department.

Future programs will follow a different management model and will be more adaptable to rapid advances in technology and to new ideas from non-traditional commercial vendors, Hartman said.

The advice he received from business experts was that the problem with joint simulations does not rest on technology, but rather on "understanding who your customer is and building a flexible acquisition process" that allows current vendors and new players from the commercial sector to participate.

The misperception among commercial suppliers and small businesses is that the military simulation industry is a closed community of "big guys" who win the large contracts, Hartman said. "Industry is not a homogeneous body."

To gain the benefits of the latest technology, the Defense Depart-

ment should work not only with incumbent Pentagon contractors but also with niche vendors that provide off-the-shelf products and develop simulations for the entertainment consumer market.

The Defense Department's ability to successfully develop and deploy joint simulations will be tested, pending budget negotiations, under a three-year pilot program beginning in fiscal year 2006, said Hartman.

The plan is to tackle a specific "training problem," he said. Most likely, it will be joint close-air support. JCAS was identified as a training shortfall that military commanders want addressed.

"We would try to do a more commercial management scheme and have people competing for different pieces, rather than have one company building all the simulations," explained Hartman. "The requirements would be set jointly." The end product may be some sort of JCAS simulator, plus additional models embedded in

existing systems.

The pilot program will allow the Defense Department to iron out the wrinkles typically encountered in a new procurement and to figure out how to attract the best technologies from vendors who normally don't bid on military programs.

"The current acquisition system locks out people that potentially could provide valuable tools and technology," said Hartman. "Until we find a better way to conduct our acquisitions, we won't be able to solve that problem."

The Training Capabilities report also recommended that the Defense Department consider the intelligence agencies as part of the customer base for training systems. "Whereas intelligence has served in the past more as a training aid to the war fighters, the intelligence community must now be made an integral part of the training audience." **ND**

Videogame Market: A Huge Source of Untapped Technology

While the Defense Department spends billions of dollars each year on computer-generated simulations, it has yet to take full advantage of the technology available in the commercial gaming industry.

The military services in recent years have co-opted videogame technology for training and recruiting purposes, but they should make a more aggressive push to tap into the entertainment industry market, says Ben Sawyer, a gaming expert and founder of the "Serious Games Summit," which promotes the educational value of videogames.

"There is a huge untapped potential for technology transfer," Sawyer tells National Defense.

One reason why mainstream gaming technology has advanced so rapidly is the fiercely competitive nature of the market. "It has been a Darwinian environment for 30 years," said Sawyer. With billions of dollars at stake, game developers employ rigorous quality controls, often leading to more visually realistic simulations than those coming from traditional defense contractors, he added.

But the games market can be a chaotic environment in which to do business. While the Defense Department covets "industry standards" in military programs, the gaming industry has no commitment whatsoever to standards, Sawyer said. "The culture is to start from scratch and throw out the legacy codes."

So far, the U.S. Army has been the trailblazer among the military services in the use of videogames. The hugely successful "America's Army" ranks in the top five online games. The service also funds a think tank, called the Institute for Creative Technology, which employs movie-industry talent to exclusively create simulations for the Army.

The best-known ICT products are the Full Spectrum Command and Full Spectrum Warrior videogames, now used to train junior officers. "Those are really well done," said Sawyer. The level of sophistication of these games is atypical in the military sector, he added. "The Army wanted something that was commercial quality and was willing to write the check."

The military is ahead of everyone else in combining games with learning, Sawyer said. "Industry should be ashamed of that."

But if the Defense Department is serious about exploiting this technology, it will need to invest in talent, or it will end up wasting money, Sawyer advised. "The best way to mitigate risk is to hire people with specialized expertise in building games."

Investment in the latest PC technology also is critical. The visual fidelity in games today is so advanced that PC technology barely can keep up. That is why the latest versions of commercial games don't run on computers that are more than two years old.

The good news for the military is that games are visually realistic to the extent that they can be made "culture-specific," to reflect the values and doctrine of the service, for example.

Sawyer said he is hopeful that the gaming industry will make a greater effort to understand the needs of government agencies, particularly the Defense Department. "We need to educate developers on how to communicate with customers."

Large defense contractors also are key customers for the gaming industry. The defense industry increasingly is becoming aware of demographic trends that point to a higher demand for sophisticated simulations both for training and for prototyping new weapons.

Most junior officers today grew up playing with Nintendo, Xbox or PlayStation

videogame consoles. Anyone who was born after 1970 is likely to have an affinity to 3D-game environments. If the trainers are "klugey," they won't like it, Sawyer noted.

Critics, however, point out that although simulations can be valuable for entertainment and training, they are not precise enough for other military applications, such as testing weapon systems. Ninety percent fidelity for training might be enough, but for testing a weapon system, a game may not suffice.

"We are cognizant of the fact that the game industry can't walk in like it's 'High Noon,' saying we can solve every problem," Sawyer said.

The weapons acquisition and testing fields offer vast opportunities for game developers, he added. "In training, everyone thinks simulations are too expensive. But in a weapon system program, a few million might be a drop in the bucket."

The Army already has begun efforts to spin off the America's Army game technology into weapon-research and development projects.

One of the creators of America's Army, Col. Casey Wardynski, said several R&D agencies have contacted him about using the game to prototype new weapons, such as the XM-8 infantry rifle. America's Army also can teach soldiers how to employ robots that disarm bombs.

Wardynski, who is director of the Army office of economic and manpower analysis, explained that the game started out as a solution to an economic problem.

"The game was designed to make it costless for people to find information about the Army," he said. "Because it's immersive and fun, it's designed to make it costless to assimilate that information. The key idea was to bring the cost down of learning how to be a soldier." —Sandra I. Erwin