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Commercial Simulation Market Drives Industry's Future Growth

by Jessica Drake

Market growth in the simulation industry belongs to companies that put their knowledge to work across boundaries. The future is in networks that link users worldwide and in applications that serve defense and commercial needs.

According to Training 2000, a simulation market survey produced by the National Training Systems Association, the reward of profits awaits those who design systems to help customers train the way they work-together.

Growth is forecast for the simulation industry in commercial markets. For Pentagon suppliers the transition to commercial business will be challenging, says the survey.

"Military focused aerospace companies must consider commercial application of simulation and training technology to remain viable," Training 2000 says.

Currently defense work accounts for 75 to 85 percent of modeling and simulation work, according to Don Campbell, executive director of the National Center for Simulation, Orlando, Florida. "It is starting to move the other way," he says. "It has to move the other way."

Stan the Man

He cites commercial applications already on the market including the standard man, or Stan the Man. Stan can simulate the human symptoms of any medical situation except surgery.

A major pharmaceutical company tests new drugs on Stan, who can replicate human response to treatment. In September, he was introduced in community college classrooms throughout Florida as an aid in emergency medical training.

The center plans to introduce Stan, who is a world traveler, to classrooms across the United States.

Engineers are already at work on the next project—a driver simulation for new teenage drivers. "We are planning to bring the technology to driver's education classes with the American Automobile Association and several

insurance companies," said Campbell.

The civilian market has opened up from the traditional demand for full flight simulators, the leading commercial application of the technology, but the demand for pilot training systems will remain strong, says Training 2000. "The order of large numbers of new aircraft during the next 10 years will result in an increased need for all types of training and simulation equipment for airlines worldwide," says the report.

New aircraft deliveries are expected to exceed 900 units this year. If the current cycle continues, orders for full flight simulators could top 38 annually, the survey asserts.

At the same time, the military market is expanding to include more than jet fighter systems. Contracts include trainer simulations of tanks, rifles, and system maintenance.

The key is joint programs among the services. "A clear trend which has been driven by downsizing is the movement toward 'jointness,'" says Training 2000. "This trend manifests itself across the spectrum of military activity, whether for training, equipping, or employing the [armed] forces."

The systems must be interoperable and reusable, according to guidelines given by defense planners.

To ease the connection, the Defense Modeling and Simulation Office (DMSO) instituted a common technical framework for all defense simulators. The high-level architecture (HLA) is the standard for all defense training systems, and active systems must be compliant by October, 2000.

Truth in Fiction

With fewer ranges big enough to handle equipment tests, commanders are turning to simulators to maintain force readiness. "If you really need to do meaningful training, you are going to need do it in a simulator because then you have total control of the environment," says Air Force Col. Kenneth C. Konwin, who heads up the DMSO in Alexandria, Virginia.

Commanders are looking to simulation technology as the solution, says Konwin. The deciding factor will be the ability to train in multiple military platforms at one time.

One of the challenges faced in defense applications is achieving a realistic environment. Fighter pilots, for example, must be able to interact with allies in order to effectively train for combat.

High-level architecture enables the creation of a "common representation of a synthetic environment," explains Konwin. "HLA allows you to get the accurate stimulation of that environment through the line-because most simulators have a hard connection-to stimulate your displays in the cockpit, as they would if you were getting a radar return off the ground "

they would if you were getting a radial return on the ground.

That is not the way it is right now. "Getting people to see the same environment across types of hardware, different platforms, and application is still beyond the state of implementation right now," says Konwin.

Fidelity, the similarity of a simulation to its real world counterpart, is an issue industry is working on also, says James Burke, former chairman of the executive board at the National Training System Association when the market survey was compiled.

For example, the real experience has fidelity of 100 percent. Flight simulators with a level-D rating from the Federal Aviation Administration have fidelity of 80 percent, explains Burke, who works in business development for Dynamics Research Corporation, Andover, Massachusetts.

"Fidelity needs to be appropriate to the lessons to be learned," says Burke.

Getting the proper technology matched with the correct lessons requires up front evaluation and human factors work, says Burke.

Renter or Landlord

New expectations come with budget restrictions that are changing military units from owners of simulators to renters. There is less interest in buying and operating simulators, Training 2000 reveals. Decision makers prefer to give contractors the responsibility of upkeep and investment.

"The Defense Department is modifying its training acquisition strategy to emphasize commercial practices and off-the-shelf products, and procurement of services instead of hardware," says the survey.

For industry that means settling in as proprietor or looking for new buyers.

Simulation businesses may find the transition to commercial markets to be difficult, Burke says. He points to the traditional defense market base as the first reason. Most employees in the business have military backgrounds that allows them to talk the language of the Pentagon. As they move into commercial applications for medicine, entertainment, and flight, they experience a language barrier.

"Our Pentagon-based industry is reluctant to venture into the new arena because they don't understand it," Burke says. "Commercial contracts are awarded more on reputation and past performance than on the letter of specification."

In order to develop needed relationships, industry must go to where potential clients are. "The defense business is easy and comfortable. We have to stretch ourselves," says Burke. "We can't expect them to stretch to us."

