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## **Video Games in Military Training: An Interview with Roger Smith**

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Roger Smith is the Chief Technology Officer for the U.S. Army Program Executive Office for Simulation, Training, and Instrumentation (PEO-STRI).

*AAB: What is the role of videogames – commercial as well as ones designed for military use – in the PEO STRI training programme?*

RS: PEO-STRI has found value in a number of computer game products that have been turned into training systems or used as one part of a larger simulation. Specifically we acquire and field the following products with a game component:

- AMBUSH was part of a DARPA “DARWARS” project and uses the Operation Flashpoint game as a tool to teach teams of people to perform specific missions. We have deployed this game-based system to over 100 sites around the world. Its original mission was to teach defensive behaviors to convoy units that are ambushed. But a number of scenarios have been created to teach additional skills since its first fielding, like route clearing, natural disaster relief, orienteering, search and rescue, and interrogation skills. We also serve as a distribution center for scenarios that are created by other organizations like Los Alamos National Labs and units that train with the game. Recently a unit in Iraq used the game to create a Machinima training video showing the right and wrong decisions they made in trying to apprehend a group of insurgents.

- BiLat was created by the Institute for Creative Technology at the University of Southern California. It is built on the Unreal 2.0 engine and teaches soldiers the appropriate tactical and cultural means for holding meetings and discussions with local government leaders in Iraq. The game uses a question and answer engine to determine whether the soldier receives the information he is looking for and is able to progress to the next level. There are no combat activities in this game. We will soon be distributing this to our AMBUSH customers.

- Tactical Iraqi is another product of the ICT at USC, also built on the Unreal engine. This game teaches Iraqi language and cultural skills. The players actually learn basic linguistic phrases through the play of the game.

- AMBUSH Replacement. We are at the very beginning of a procurement to acquire a game that can replace AMBUSH. Since the underlying Operation Flashpoint game was released in 2003, a number of the technologies have become outdated. Soldiers expect better visuals, a smoother user interface, better AI, more robust tools for building their own scenarios, and assistance in measuring and recording performance in the game.

- Tactical Questioning uses the Cryengine that appeared in the Far Cry game from Crytek several years ago. It has been supplemented with unique AI software developed at ICT, and commercial voice recognition and voice generation software. The system allows the player to carry on a verbal conversation with a game character. It teaches soldiers appropriate cultural norms, allows them to become familiar with standard forms of questioning, and provides experience in working through a translator.

- OneSAF is one of our leading simulation products. It has user interfaces that are very similar to those that have been used in military simulation over the last couple of decades. We are creating a 3D interface to the game that allows the users to interact with the simulation in a manner very similar to a commercial computer game. This is not the adoption of a commercial game, but rather the use of a 3D visualization application called the jMonkey Engine.

- Helicopter Simulation. Finally, we are building an interface between one of our large helicopter simulators and the Virtual Battlespace 2 (VBS2) game. This will allow us to use the game as a means to interact with and stimulate pilots who are being trained in a fully immersive flight simulator.

*AAB: Are videogames and computer simulations similar to commercial titles being used more often now than in recent years? Do you predict their use to increase in the near future?*

RS: There are technologies that are tightly associated with computer games and that are making huge improvements due to the popularity and financing that is available from game customers. These technologies include 3D engines, graphical user interfaces, AI, physics modeling, network play, and persistent worlds. The continued growth of gaming is financing the advancement of these kinds of technologies and creating products that can be used in a number of very diverse industries like military training, architecture, advertising, urban planning, and a host of others.

I think we will see a continued increase in the use of gaming technologies all across society. This is similar to the adoption of personal computers, networking, email, and the web by all types of businesses over the last two decades. Game technologies will follow a similar trajectory.

*AAB: Do you develop your own training games or is that mostly contracted to outside developers?*

RS: PEO-STRI is an acquisition organization. Our function is managing funding, contracting with companies, guiding development to meet Army requirements, and managing the deployment of the systems. In FY08 we spent over \$3.0 billion acquiring products and services for training, most of this by contracting with commercial companies.

*AAB: What are the skills that these simulations teach your soldiers and officers?*

RS: We have fielded over 178 different training products. In some cases we have purchased and deployed over 15,000 copies of a single device. In gaming, AMBUSH is our largest deployment and we have released about 800 copies of the game.

Games are not appropriate for teaching physical or tactile skills. Those need to be done with live people, live equipment, and live tasks. Games are much better at teaching cognitive and team-oriented skills. The scenarios we create with games attempt to teach people to work together toward a common goal and to learn the patterns of behavior that are effective in completing a mission. In most cases, the soldiers also practice these skills in a live environment. Games allow us to spend more time on cognitive tasks without the limitation imposed in the physical world.

*AAB: Many companies that produce serious games for training choose not to take on work for the military. Do you think that is justified in any way? Is it a moral choice?*

RS: I think it is a business choice. Companies and customers are not generic entities. Both are very specialized. Each company is a customized organization that knows how to create specific products and interact with specific types of customers. The companies that are typically called "defense contractors" are created with the structures, functions, policies, expertise, and facilities necessary to do work for the military.

Just as many defense contractors find it very difficult to do commercial work, many commercial companies find it difficult to do military work. The customers and products in these two domains are significantly different.

*AAB: Are most soldiers these days familiar and comfortable with gaming conventions? Does that make them easier to train with videogames, as it is something they naturally take to?*

RS: Our research and our hands-on experience shows that about 50% of young enlisted soldiers call themselves “gamers” or are familiar with the mechanics of game play. At the young officer level it is around 33%. We have learned that we cannot assume that all soldiers have this familiarity.

In training we usually try to pair people up so that every team has an equal mixture of experienced and novice game players. When we do this, it does not take the novices long to acquire the skills necessary to use the games.

*AAB: What do you think of the latest developments in interface technology? I have read about the US Air Force looking into technology that would allow pilots to control airplanes with their minds. Such brainwave technology is now starting to be commercialised by companies such as Emotiv. Is that the future for training games?*

RS: Would you fly in on a commercial airplane if they announced that the pilot was controlling the plane with his mind? This technology is still in the research stages. I know that Emotiv and other companies are coming out with commercial products. But I also talk to the university and government researchers in this area and they do not believe these devices are ready for any industrial or serious applications.

We have had the Eye Toy on Playstation for several years and the NES had the Nintendo Data Glove. These are interesting and entertaining interface devices. But none of them have replaced the hand-controlled devices and I do not think we will see a big change in this in the near future. But keep doing those mental push-ups so you will be ready.

*AAB: In your opinion, do these games and computer simulations still have to be fun and engaging or does having a captive audience for them mean that you don't have to worry too much about that?*

RS: I listened to a great presentation on virtual worlds by Daniel Laughlin from NASA last week. When asked the difference between games and simulations he replied, “with a simulation you have to bring your own motivation.” I thought that was an excellent way to differentiate the two. The soldiers that we train have a motivation for succeeding that resides outside of the game – it is proficiency and survival. If a game can make them more proficient at a skill and help them survive in a lethal environment then they are going to be all over it. But if the game does not provide valuable training, in spite of the “fun factor”, it is going to get moved to the recreation room or the storage room.

Computer games can potentially boost the existing motivation of soldiers by adding back story, artwork, interactivity, immediate feedback, intuitive GUIs, and accessibility. When you layer those on top of learning valuable skills you have a winning combination. But soldiers are in a different situation from high school students who are trying to learn calculus with a game – students might get a lower grade if they fail, soldiers can get seriously injured or killed if learning does not happen.

*AAB: How do the training results achieved with videogames and computer simulations compare to more traditional methods of training?*

RS: Time-on-task is an important part of learning. The more time you spend rehearsing, exploring options, and studying outcomes, the better you will become at a skill. Games can add to that by encouraging soldiers to spend more time learning a skill. They also overcome some of the limitations of older system that get in the way of learning. If a simulation is so difficult to use that you spend all of your time and mental energy wrestling with the hardware and software, then there is little left to apply to learning. If you cannot get your hands on a simulation every day, then your learning is limited due to lack of access. Games can improve both of these situations.

*AAB: Anything else you would like to add?*

RS: There are several really good military gaming forums at which we discuss these very issues. PEO-STRI sponsors an annual GameTech Conference, the ADL CoLabs sponsor Implementation Fest, and NTSA sponsors IITSEC. All of these contain a great deal of insight into the use of games for training. The presenters in these forums provide some outstanding details on how games have improved training and given us more options for building systems. Game technologies are very valuable in our industry and in a number of others.