Virtual Reality Training Solutions – Moving Beyond the Hype Cycle?

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ABSTRACT

Readiness gaps created by an ever-changing threat must be narrowed by the Department of Defense (DoD) through simulation and training. With ongoing budget challenges, the DoD has often looked to the commercial video game and multimedia sector for technologies to support simulation and training. Virtual reality (VR) is one such technology that has long promised to revolutionize all aspects of training. Essentially an intuitive user interface to a computer that used a helmet mounted display (HMD) and data gloves to access a virtual environment, early VR implementations showed promise but ultimately disappointed, suffering from a variety of technical and cost challenges. Recent events, including the acquisition of Oculus by Facebook, are resulting in rapid development of enabling technologies that may dramatically change the training value that can be derived via VR-based solutions. Where today's high-end simulators rely on large and expensive display environments, emerging training systems may benefit from availability of low-cost helmet mounted displays (HMD) which are not only orders of magnitude less expensive but are also portable. Coupled with a suitable virtual environment accessed through emerging user interfaces, highly realistic simulations can now be created to support training with potential to dramatically increase readiness.

This paper discusses the results of a rapid innovation project for a DoD customer to develop a feature-rich, F-18F training system based on emerging VR technologies. It will outline advantages, disadvantages, and development challenges encountered with the latest release of commercial HMDs and interface devices. It will discuss development of a virtual crewstation concept that allows the trainee to interact with a representative cockpit using natural movements and gestures that mimic those required to operate the aircraft. Finally, it will suggest appropriate use cases for the solution with a goal to identify where usability thresholds have been crossed and VR hype remains.

BIO

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Mr. Burwell has 30 years of experience with innovative technologies used for simulation and training. With a focus on simulation and virtual environments, John has supported companies developing image generation systems, on-line virtual worlds, games for training, computer graphics, video processing and geospatial imaging.

John started his career as a software engineer working on a DARPA project at Boeing to develop emerging image generation technology for guided missile development. This lead to projects building full-mission simulators for training and engineering. With this background, John transitioned to Evans & Sutherland and eventually Silicon Graphics Computer Systems as advances in computer graphics technologies enabled new training opportunities. In 10 years at SGI, John played a pivotal role in the company's advanced graphics division that including efforts that disrupted the traditional image generation market place. Most recently, John has been supporting product management and business development efforts for Bohemia Interactive Simulations.

Mr. Burwell has a bachelor's degree in Electrical Engineering and Computer Science from the University of Colorado in Boulder, Colorado and an MBA in International Business from Thunderbird in Glendale, Arizona.