

Designing a Digital Library to Support Global Army Training

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In 1995, the Army's Training and Doctrine Command (TRADOC) and the Army National Guard began to invest in Key Enabling Initiatives to provide "training to the soldier any time and anywhere in the world." They had the additional goal to use appropriate current media formats, migrating to superior media as the technology becomes available. Computer-based training promises to provide soldiers high-quality training while reducing costs and travel time.

In their *Army Training XXI Campaign Plan*, the deputy chief of staff for training at TRADOC has created three Axes of Attack to integrate advanced technology into the Army Training Plan. These axes include Warfighter XXI for unit training, Warrior XXI for institutional and self-development, and Warnet XXI, which provides support for the other axes. The electronic foundation is the Army Training Digital Library, which can be accessed at <http://www.atsc-army.org/atdls.html>. This digital library allows users to access a wealth of training materials and resources stored on Digital Training Access Centers at TRADOC installations all over the country. For example, the access center at Fort Knox, Ky. would provide primary support for the Armor School while Fort Rucker, Ala. would support Aviation. There are 21 schools on 15 Army posts, so 15 access centers would exist to distribute training to a globally deployed Army. This provides a distributed database that

will improve user accessibility and reduce network congestion.

TRADOC has fielded two operational access centers. One, located at Fort Eustis, Va., uses an Asynchronous Transfer Mode network. The other is located at the United States Military Academy at West Point and uses switched fast Ethernet.

Architecture

The Digital Training Access Center consists of an integrated Web server, database server, and video server. The Web and database server can run on NT workstations with a minimum of two processors. Clustering technologies appear promising and could offer additional scalability and fault tolerance. In order to provide concurrent, streamed video to a large student population (more than three classrooms), the access center requires a Video Server. Video Servers can be NT- or Unix-based, tend to be highly scalable, and provide robust connectivity. A general-purpose file server can provide file-based video for a small student population.

These solutions are intended for a high-bandwidth Intranet. For World Wide Web or Internet distribution, the access center would require a low-bandwidth alternative. The systems currently fielded at Fort Eustis and West Point can provide low-bandwidth (28.8 Kbps) access to remote users and high-bandwidth (up to 3 Mbps) access to local students. Remote users can obtain higher-quality video through compact disc or digital video disc distribution, but version control

and distribution costs limit the attractiveness of this option.

The digital library will maintain the URLs for the access centers. This will provide soldiers with easy access to available courseware. The integration of Web, database, and video resources will allow content creators to create, store, and share the various multimedia components.

Future

The most significant recent advancements have been in Web-based training tools such as Java, scripting languages, dynamic HyperText Markup Language, cascading style sheets, streaming media, and database integration. These technologies have closed the gap between Web-based products and executables created with multimedia authoring products. In fact, most current computer-based training packages export to a Web format. TRADOC is currently upgrading its software to incorporate the management of these new capabilities. Inevitably, the quality of the courseware will determine the success of the program.

TRADOC plans to field several access centers beginning this year. To meet the needs of Force XXI, the access centers must allow access to today's users, leverage existing technology, and yet, not succumb to technological obsolescence.

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