

Usability Optimization of a Military Training System

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EXECUTIVE SUMMARY

While the application of usability engineering principles and methods is similar in commercial and military contexts, there are key requirements and challenges in military domains that must be addressed. The aim of this chapter is to describe the application of a combination of usability engineering methods in the development of a military training system. The case involves the research, design, and development of an instructional support system to help instructors and warfighters find and execute suitable training lessons that meet their training needs. Through the application of multiple methods (contextual task analysis, iterative designs, heuristic evaluations, formative and summative evaluations), the requirements for the system were identified, the system was then designed, developed, and iteratively improved to optimize key operational performance identified with the support of field stakeholders.

ORGANIZATION BACKGROUND

Design Interactive, Inc. (DI), based in Oviedo, Florida, is a leader in Humans-Systems Integration research and development. DI provides engineering services and consulting in human performance, training systems design and evaluation, cognitive readiness, and next-generation human-systems integration. Our vision is to provide serious solutions and diagnostics for human performance optimization. DI delivers interactive design and evaluation assistance throughout the development lifecycle. DI has an extensive history working and helping organizations achieve human performance optimization with their systems, having worked for research and defense agencies such as the Navy, Army, Air Force, Office of the Secretary of Defense, Department of Homeland Security, DARPA, IARPA, NASA, and Department of Transportation, as well as Fortune 500 Commercial Companies.

University of Central Florida Institute for Simulation and Training (IST), located in Orlando, Florida is an interdisciplinary research institute of the University of Central Florida (UCF) with an annual budget of \$15+ M and a staff of 60 research faculty, a dozen research affiliates from other UCF departments and approximately 80 graduate and undergraduate students. IST performs leading edge basic and applied research in the art and science of simulation and actively supports the university's simulation education initiative. IST's research serves public and private human-in-the-loop simulation communities and advances the use of computer simulation for training, education and entertainment. The institute's vision is to be the premier academic research organization internationally recognized for creative, interdisciplinary contributions to the art and science of human-centric simulation. The institute conducts research for many government agencies but includes in its efforts the development of research projects with potential commercial applications and adaptation of military technology to civilian markets.

Lockheed Martin's Global Training and Logistics (GTL) business unit, based in Orlando, Florida, is a leading provider of training and logistics support to customers in more than 50 countries across the globe. From training pilots to fly the world's most advanced fighter jet to training troops to navigate a convoy through a hazardous urban environment, GTL offers decades of experience in helping customers achieve their missions. GTL's Advanced Simulation Center (ASC) in Burlington, Massachusetts provides simulation and training research and development services to a wide range of internal and external customers. With its origins in the United States Defense Advanced Research Projects Agency (DARPA) SIMNET program, ASC technology advances have impacted the entire modeling and simulation industry. These have included fundamental work in simulation networking protocols, semi-automated forces, immersive simulation, and augmented reality.

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