



STATEMENT OF
MAJOR GENERAL STEPHEN R. LAYFIELD, USA
DIRECTOR, JOINT TRAINING AND JOINT WARFIGHTING CENTER
UNITED STATES JOINT FORCES COMMAND

BEFORE THE HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON READINESS

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Today the U.S. military operates in an environment that is characterized by uncertainty, complexity, and rapid change. To prevail in this environment, the joint force must be capable, against a plethora of current threats, adaptable to rapidly emerging new threats, and ready to respond across the full range of military operations. The non-state, insurgent and terrorist adversaries the nation currently faces around the world have chosen asymmetric approaches to warfare that avoid the conventional strengths of the joint force. To counter these threats, the joint force must remain creative and flexible if we are to confound our enemies' designs.

Modeling and simulation (M&S) offers great potential to keep the joint force at its maximum effectiveness by instilling adaptability and flexibility where possible before the force is engaged in combat. By exposing leaders at every level to the complex operational environment, M&S offers an efficient and effective way to increase the readiness of the joint force from the headquarters to the small unit and individual level.

Effective joint training requires a joint environment, oftentimes synthetically generated, to enable the Joint Force to exercise in a broad range of warfighting tasks prior to executing them on the battlefield. This synthetically generated joint environment also supports joint experimentation, test and evaluation, mission rehearsal, and mission analysis. As the only DoD

organization tasked to enable and integrate joint warfighting capabilities at all levels, U.S. Joint Forces Command (USJFCOM) possesses an essential role of identifying the joint requirements for M&S to achieve synergy in the joint warfighting environment: USJFCOM integrates and enables M&S across the services, combatant commands, multinational and interagency partners by ensuring joint interoperability across Service systems and integrating joint enablers into the training environment.

A key component of USJFCOM's M&S capability is the Joint Live Virtual and Constructive (JLVC) Federation. The JLVC Federation is a configuration of joint and service simulations and software used to represent the joint battle space to annually support more than 20 joint training exercises and Operation Enduring Freedom mission rehearsal exercises (MRX). The JLVC Federation is USJFCOM's premier M&S enabler in support of multi-level joint training events from the strategic to tactical level, providing multi-resolution stimuli to meet the information requirements of multi-level training audiences. The command expends approximately \$19M annually to provide joint M&S in support of roughly 20 combatant command exercises per year. Additionally, the Joint National Training Capability program (JNTC) allocates roughly \$21M annually in support of the distribution of live, virtual and constructive (LVC) data for up to 200 service exercises. The efficiencies of distributing high fidelity M&S is great when compared to the high costs of physically relocating personnel and equipment to displaced geographic locations to participate in exercises. USJFCOM alone has saved \$5M annually in travel costs.

For example, at the service level, the Navy can now certify aircraft carrier strike groups staffs using the Fleet Synthetic Training (FST) series of exercises. In the past, the culminating event for a strike group staff could only be accomplished through a live Joint Task Force Exercise (JTFEX). This staff certification can now be accomplished utilizing a synthetic environment where surface ships are linked with aviation and submarine simulators accomplishing the required operations to meet the joint exercise training standards. In many of these training events, the Strike Group is also networked to coalition simulators along with other joint assets like the Air Force Airborne Early Warning aircraft and Army Patriot Batteries. The entire audience (joint and coalition) are trained as closely as possible to how they are employed in theater. The end result of this modeled and simulated training is shorter at-sea periods, reduced wear and tear on personnel and equipment, and greater exposure to a broader array of joint capabilities.

Across all warfighting communities, simulated training advances have been significant, yet the use of advanced simulation technology has not been achieved for the training of infantry small units in close combat. State-of-the-art simulation training that is demanded and accepted as routine for aviation, armor or maritime forces, is negligible or almost non-existent on a large scale for U.S. ground forces.

Since 1945, American infantry units have suffered over 80% of our nation's military casualties. Research concludes these casualties often occur in the initial fire fights, yet very few resources have been applied to the development of realistic immersive simulation of ground operations to prepare ground troops for their first engagements with the enemy. Though the

rudimentary simulation designed for close combat currently affords units some level of challenge, it does not yet approach the level of sophistication that is commonplace and deemed essential in the other warfighting disciplines.

Today's force is engaged around the world and assigned a variety of missions confronting insurgents on the ground. The development of a close combat/infantry immersive training simulation capability is a national priority in terms of creating top-performing small units able to take advantage of joint surveillance and fire support. Dramatic advances in immersive simulation, artificial intelligence, and gaming technology must now be harnessed to bring state-of-the-art simulation to small infantry units. The immediate task is to create a prototype immersive training simulator as a means to enhance warfighter survivability, amplify exposure to joint and combined assets, improve the employment of our joint-asymmetric capabilities, and increase the overall effectiveness of small unit performance to defeat the enemy while protecting the innocent who are intentionally jeopardized by our enemies' tactics. Ultimately, casualty reduction, fewer ethical missteps, psychological resilience of our own troops and enhanced mission success rates are the goals.

The Deputy Secretary of Defense has directed funding to the Services and U.S. Joint Forces Command to support the urgent development of infantry immersive training simulators. The Future Immersive Training Environment (FITE) Joint Capability Technology Demonstration (JCTD) is a Department wide \$27M effort focused on providing training capabilities that emphasize close combat tactical and ethical decision making in a simulated environment. Resource Management Decision (RMD) 700 provides \$285M to USJFCOM across FY11-15 to

assist the Services with the development of immersive trainers that replicate the joint operating environment.

Prototype demonstrations of an initial system at Fort Benning and Camp Lejeune have yielded positive results for an individually worn device that provides a significant enhancement to presenting a simulated environment for individual small unit training. Spiral II of this effort will focus on a prototype mixing synthetic and physical elements to provide a simulated environment and virtual reality. This two year project has sharpened the Department's M&S efforts to enhance infantry tactical training through emergent technology. We are making progress.

USJFCOM, in partnership with Army Program Executive Office – Simulation, Training and Instrumentation (PEO-STRI) and the Fort Bragg Battle Command Training Center, recently worked with the 82nd Airborne Division to provide the 1-38 CAV with a virtual, in-theater capability to conduct mission rehearsals for convoys and high value target (HVT) operations, battle drill visualization, familiarization for new personnel, and leader certification. This M&S capability provides an in-theater mission rehearsal training capability, providing simulation for use by small unit leaders. Funding for this project is supported through the Afghanistan Rapid Data Generation Quick Reaction Fund for approximately \$270K. The success of this program has led to a second request by 2-87th Infantry Battalion, 10th Mountain Division to provide the same in-theater mission rehearsal capability when the battalion deploys to Afghanistan. If positive results are achieved, we will help to rapidly expand this effort.

Throughout USJFCOM, M&S is generating real warfighting capabilities. Recent M&S projects include the Joint Integrated Persistent Surveillance (JIPS - \$2.8M) which models persistent surveillance systems, complex terrain, and various surveillance missions to determine what works best; the Joint Counter Intelligence/Human Intelligence Integration (JCIHII - \$112K), which models solutions to improve the timely sharing of accurate and actionable intelligence resulting from counter intelligence and human intelligence collections at tactical through national levels; the Joint Targeting Proof of Concept (\$122K), which models the joint targeting process, leading to the implementation of a set of cross cutting initiatives to improve DoD's ability to support targeting needs of combatant commanders.

Declining budgets and the wide array of threats and warfighting domains will demand that M&S become a more integral part of the Department's training and readiness program. Modeling and simulation can be used to train for irregular warfare, cyberspace operations, logistics support, space control, and missile warning and defense. Today's gaming and simulation technologies afford great opportunities to create the "battle space of tomorrow," to take leaders out of their comfort zones through high fidelity gaming and realistic virtual worlds, and better prepare them for the uncertainty of battle. Wisely invested M&S resources will ensure data standardization and common infrastructure to support joint simulations. As M&S technology increases in complexity, this sharing of data and infrastructure offers the potential for cost savings.

Today's force must be balanced to effectively counter an irregular threat, without compromising our nuclear deterrence or conventional superiority. For our uncertain future, our military leaders and our forces will need to remain the most versatile in our nation's history.

M&S has proven its value in enhancing joint training, experimentation and testing needs in today's complex environment.