

# adaptive marksmanship

## AugCog for Marksmen

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RDECOM-STTC and DARPA are developing a close quarter marksmanship next-generation training platform that will be fully automated and self diagnostic. It will guide soldiers through drills and trigger corrective activities that address deficiencies identified in their marksmanship skills. This effort, with Conflict Kinetics as the performer, began as a DARPA Phase 1 Small Business Technology Transfer (STTR) effort, led by LCDR Joseph Cohn, and has recently transitioned as a Phase 2 effort to RDECOM-STTC (Research Development & Engineering Command – Simulation & Training Technology Center), Orlando, FL, under Mr. Frank Dean's management.

This cost saving platform's training approach is based on pro-sports training methodologies, which have been adapted to support modern marksmanship training. The end product will be a system that will dramatically increase the marksmanship abilities of the Warfighter, transforming them from novice to expert by providing adaptive and tailored marksmanship drills based on a thorough analysis of how expert marksmen train and perform.

There is clearly a need for alternatives to live ammunitions training. Police departments, military units, fed-

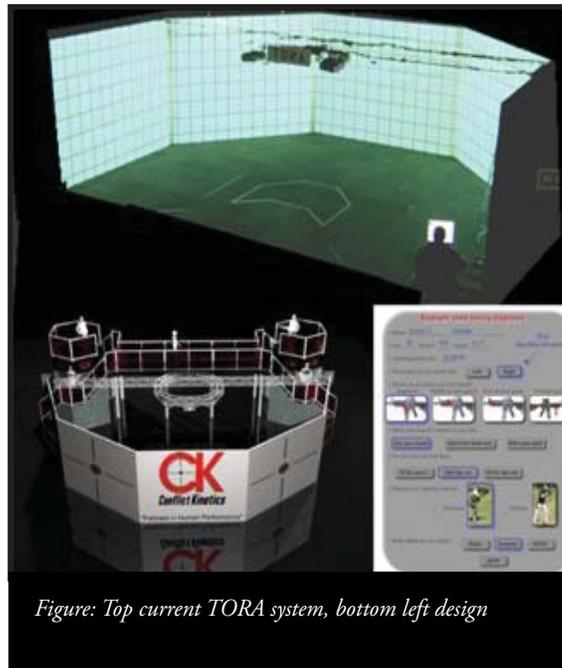


Figure: Top current TORA system, bottom left design

eral security agencies, private security companies, and allied foreign military sources are seeking new, cost-efficient, and, innovative methods for increasing marksmanship precision and effectiveness. Elite soldiers, trained using a prototype of this training system, have shown up to 300% improvements in peripheral target acquisition, after a single session. Typical gains depend on shooter level and previous commitment to ocular training. Even advanced snipers and highly advanced shooters have shown additional improvement, showing up to 18% improvement in peripheral target engagement.

In Phase II, the current marksmanship trainer will become fully operable by the user through touch

screen technology, eliminating the need for live expert trainers and live ammunition. The system will use advanced algorithms and machine learning software to analyze data in near real time. Adaptive techniques include the modification of drill sets so as to alternate between exaggerating and simplifying situations where the shooter is deficient, and then ultimately bringing the shooter back to the baseline to measure improvement. The system will also incorporate heart rate monitor data capture. This data serves as another element that feeds the data mining and adaptive nature of the Tactical Ocular Reaction

Area (TORA) system (a simulation for pneumatic or compressed air small arms weapons.), and supports the ability to predict the best corrective path. The entire system will be robust, stable and deployable to military locations at homestation and abroad. During Phase 1, Conflict Kinetics received numerous awards for their efforts to capture and improve the knowledge, skills and abilities of expert marksmen, including: an award of outstanding performance from C3-3 Special Forces group Fort Bragg NC, an award of appreciation from Drug Enforcement Agency (DEA), and award of outstanding Performance from Directorate of Emergency Services (Airborne) Fort Bragg NC