

# Hybrid Irregular Warfare (IW) Improvised Explosive Device (IED) Network-defeat Toolkit (HI<sup>2</sup>NT)



Ben Jordan, Director of the TRADOC G-2 Operational Environment Laboratory, and Joe R. Gonzalez, TEES Associate Research Engineer.

The Texas Center for Applied Technology (TCAT) was recognized by the U.S. Army Training and Doctrine Command (TRADOC) Deputy Chief of Staff for Intelligence (G-2) for its role as the system integrator for a federated training system designed to counter improvised explosive device (IED) networks. Ben Jordan, Director of the TRADOC G-2 Operational Environment Laboratory, presented the award on April 19, 2011, to Joe R. Gonzalez, who led the system integration effort with Blake Stoker and Christopher Kocmoud. The HI<sup>2</sup>NT federation is in the completion stages of Spiral 2 development and is on track to begin its next development spiral later this year.

The Hybrid Irregular Warfare (IW) Improvised Explosive Device (IED) Network-defeat Toolkit, known as HI<sup>2</sup>NT, is designed to train Army service members to develop specific counter IED network tactics, techniques, and procedures at the tactical level; to interact in diverse cultural settings, including Afghanistan and Iraq; to understand the consequences of various force activities upon the population; and to hone negotiating skills required to earn the trust of the local population.

TCAT as the system integrator led the development this past year and achieved federation level interactions last October which enabled the use of the system as a hybrid federation of models.

This version of HI<sup>2</sup>NT was demonstrated at the December 2010

Interservice/Industry Training, Simulation and Education Conference (I/ITSEC) held in Orlando, Florida, and has been subsequently demonstrated to government and military decision makers as a first of its kind training system.

The HI<sup>2</sup>NT federation is composed of four key models that are linked together into a hybrid model framework. The One Semi-Automated Force (OneSAF) simulation developed by the U.S. Army provides a constructive entity-based kinetic ground model enabling unit movements, activities, and kinetic events. The First Person Cultural Trainer (FPCT) developed by the University of Texas at Dallas provides a first person virtual environment in which culture specific interactions can take place. The Joint Non-kinetic Effects Model (JNEM) developed by the NASA Jet Propulsion Laboratory (JPL) monitors and adjudicates all activities and the resulting changes to civilian group satisfaction, mood, and cooperation and can initiate situational, environmental, and other actions that affect the mood of the population. The Process-Oriented Data Visualization (ProDV) visual analytics toolkit developed by TCAT monitors and visualizes JNEM calculated satisfaction, mood and cooperation effects.

## TEXAS CENTER FOR APPLIED TECHNOLOGY

There are many problems that require the careful and proper integration of applied technologies to find solutions. The Texas Center for Applied Technology (TCAT) was created to focus on these specific problems and to develop effective and efficient solutions. TCAT's core competency is the innovative application of existing technologies and advanced research to solve complex real-world problems.

TCAT's primary objective is to apply and test technologies to address targeted problems and engage basic research as required. TCAT has employees in a variety of locations with the ability to perform research that cuts across multiple technologies, disciplines, and cultures. The Center's employees are knowledgeable regarding customers' requirements and are ready to respond effectively to provide the best value for the customers' needs including expertise in technology insertion, technology assessments, and test and evaluation.

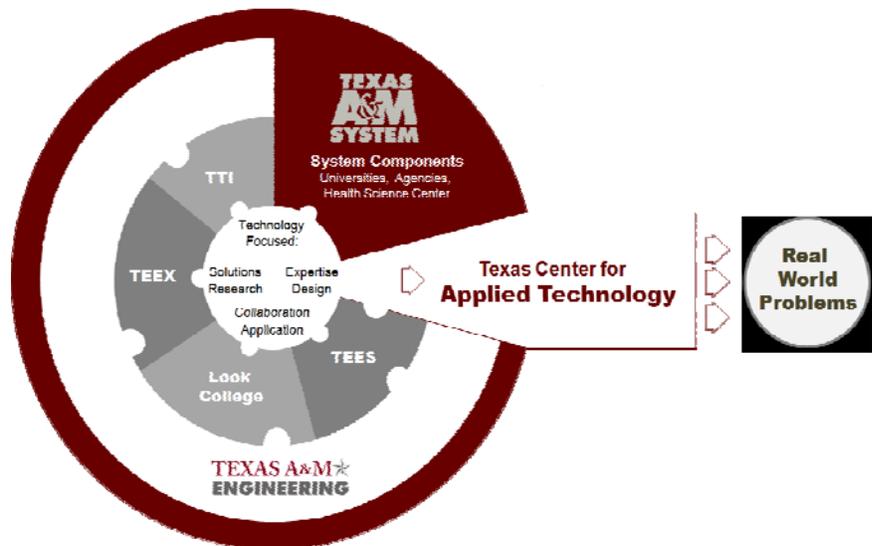
TCAT is part of the Texas A&M Engineering Experiment Station (TEES), a member of The Texas A&M University System. The A&M System is one of the largest and most comprehensive systems of higher education in the United States. Through a statewide network of eleven university campuses, seven state agencies, and a comprehensive health science center, the A&M System educates more than 120,000 students on its university campuses, conducts more than \$780 million in research, and reaches another 22 million people through service each year. TEES is an engineering research agency for the state of Texas and conducts over \$147 million in research annually. Because of the Center's position within the Texas A&M Engineering program, TCAT's expertise can easily be extended by rounding out its team with world class faculty researchers, as appropriate. TCAT is in an excellent position for collaboration not only with The Texas A&M University System components and their customers but with other universities, institutions, centers, and industry.

## TCAT'S CORE COMPETENCIES

Energy Sustainability ★ Environmental Sustainability  
Manufacturing & Systems Engineering ★ Information Technology ★ Modeling & Simulation  
Technology Insertion ★ Test & Evaluation

## TEXAS A&M ENGINEERING

Texas A&M Engineering consists of the Dwight Look College of Engineering, and three engineering agencies, including TEES: Texas A&M Transportation Institute (TTI) conducts research and professional education in all modes of transportation. The Texas A&M Engineering Extension Service (TEEX) works to develop a highly skilled and educated workforce and enhances public safety through training, continuing education, and technical assistance.



### For more information contact

TCAT Headquarters

**Address:** 3407 TAMU, College Station, TX 77843

**Phone:** 979.458.0250

### Executive Director

James A. Wall

**E-mail:** [tcadministration@tees.tamus.edu](mailto:tcadministration@tees.tamus.edu)

**Web:** <http://tcat.tamu.edu>

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TEXAS A&M  
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