

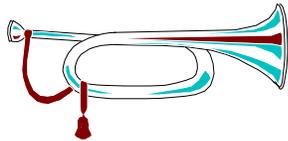


# A M C C O S T B U S T E R S B U G L E



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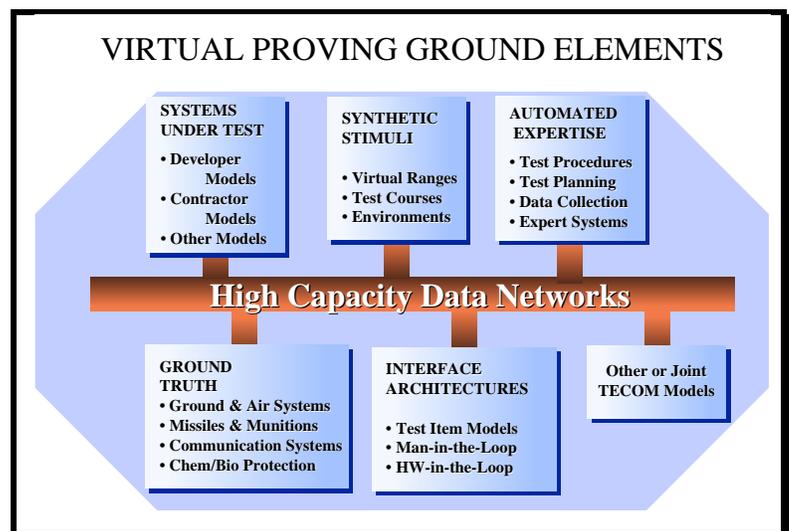


## THE VIRTUAL PROVING GROUND -- TESTING THE FUTURE!

Exciting initiatives are underway at the Test and Evaluation Command (TECOM) leveraging the advances in modeling, simulation, and communications technology to support Army Acquisition Streamlining. Through the Virtual Proving Ground (VPG) initiatives, the Army is reengineering its test capability using a comprehensive interrelated set of synthetic environments which will confirm a system's readiness and technical maturity, from concept through fielding, and with substantial reduction in program resources.

The VPG program will provide expanded test expertise, test stimuli, and test environments to accommodate the challenges of the acquisition community. The VPG consists of standardized automated test methodology, synthetic test stimuli and synthetic test environments that are based on ground truth data and physics, all of which are linked by and made available to the military acquisition via standard interfaces and high capacity networks. It is a cohesive and comprehensive capability for testing concepts, conceptual models, hardware prototypes, subsystems, full systems and a mixture of all of the above. It will provide proven standardized automated test methodology and validated synthetic test stimuli and environments with distributed capability across a wide range of test resources. It provides a better and faster way to gather data to characterize system performance and safety.

The VPG program yields test tools that are located and used wherever they make sense through an integrated and interconnected set of testing resources. These tools provide the capability to integrate live and virtual testing. Virtual testing, which is testing in synthetic environments with synthetic stimuli, minimizes range time and personnel requirements; allows for much larger and more complex data matrices; and extends the available test envelope to scenarios previously limited by safety, environment, geography, time, or money. Live testing provides an anchor to validate virtual testing and addresses



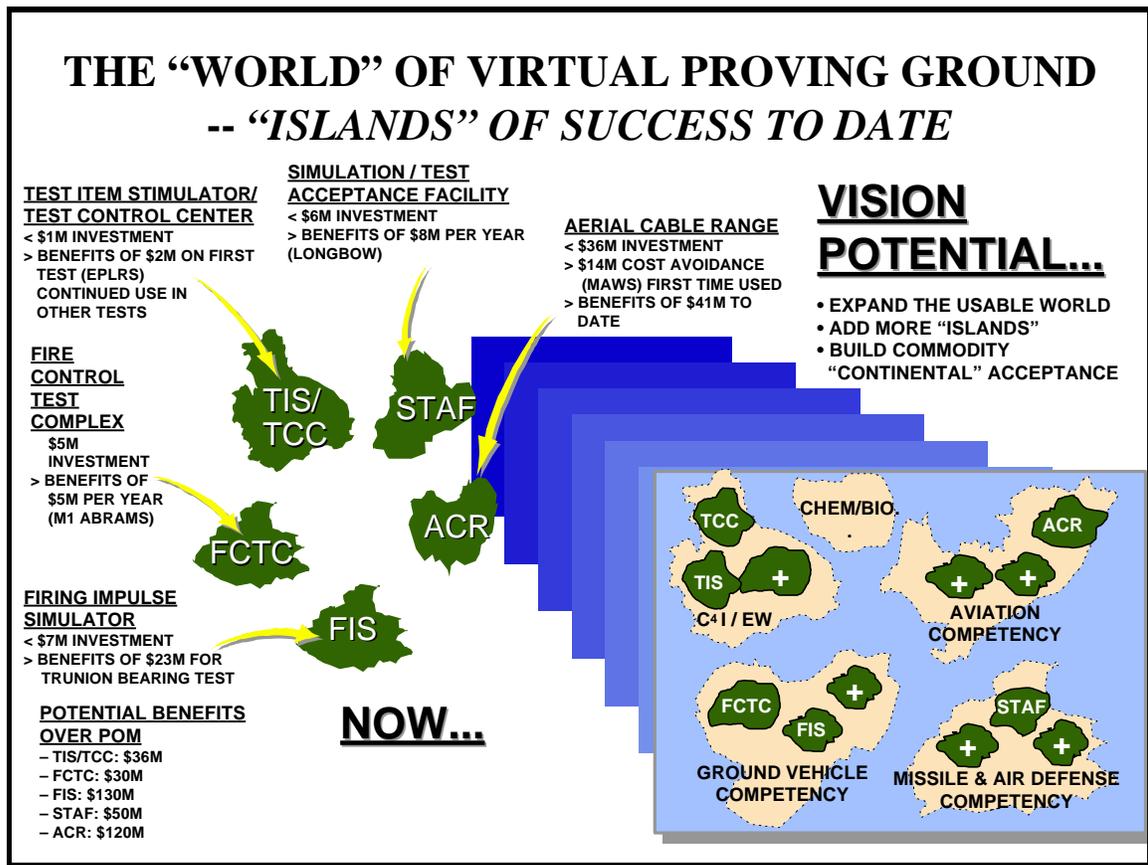
areas where TECOM and the developers lack the knowledge to properly model. Data generated from live testing serves three important purposes: (1) Provides “ground truth” to support acquisition decisions; (2) Serves as “foundation” in model designing; and (3) Supports validation of models/simulations.

Elements of the VPG (“Islands of Success”) are in place now and providing real savings to Army acquisition programs. On-going efforts focus on building upon these “Islands of Success” to develop a comprehensive, integrated set of capabilities within multiple functional and commodity areas. Extensive partnering, coordination and integration with major Army program offices and the other Services ensure compatibility, usability, and leveraging across the Department of Defense and private industry. These efforts will help

identify requirements and demonstrate early user utility for the VPG.

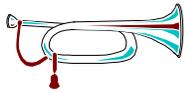
The bottom line is the VPG will enable us to influence system design early and to provide a more efficient and effective test capability in support of the acquisition process. In addition, VPG capabilities will be leveraged to improve the training environment for warfighters. A VPG tool known as Combat Synthetic Test and Training Range (Combat STTAR) has already been used to unite test and training range capabilities to provide real-time intelligence data to a Brigade in a National Training Center (NTC) rotation. The following chart and pages describe some of the “Islands of Success” of the VPG.

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Look for AMC Cost Busters on the World Wide Web at  
<http://www.amc.army.mil/amc/rm/costbust.html>.

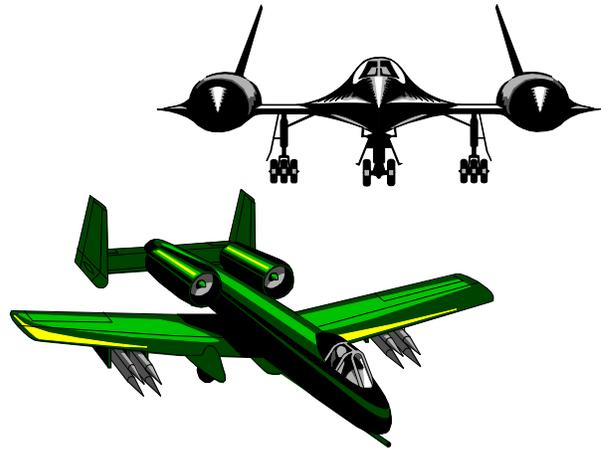
**\*\*\*S U C C E S S S T O R I E S \*\*\***



### Combat STTAR Delivers Virtual Intelligence Info

The Combat Synthetic Test and Training Range (Combat STTAR) provides integration of real-time live player and OPFOR/BLUFOR position data with constructive model (JANUS) data into virtual intelligence information for realistic intel play at NTC or synthetic combat environments for testing. The estimated cost avoidance for the September 1996 training rotation was the combined cost of JSTARS and UAV missions for 16 hours/day operation for 5 training days. JSTARS estimated flight operation cost alone is \$35K/hour. The result is high level realistic training with an estimated benefit of at least \$2.9M per rotation as compared to the cost of execution with actual systems.

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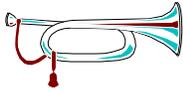


### Aerial Cable Range (ACR) Replicates Targets

A three mile long 2.5 inch diameter Kelvar cable suspended between two mountain peaks with restricted air space allows repeatable, inexpensive, and realistic threat test environments. The ACR creates an exact replica of threat targets to conduct target acquisition, countermeasures, warning devices, and drop tests without flying aircraft and drones, and yet accurately reflects battlefield scenarios. The projected cost for an open air range test of the Joint Missile Attack Warning System was \$14.5M. Actual cost with the ACR was \$700K, a cost avoidance of \$13.8M. Total benefits to date exceed \$40M.

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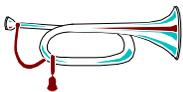
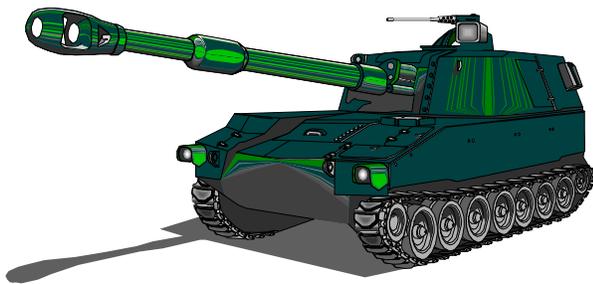




## ADEWS Jams All Services

The Advanced Distributed Electronic Warfare System (ADEWS) generates realistic electronic warfare environments for Army, Navy, Air Force, or joint testing and training exercises by injecting jamming signals directly into the system under test. Benefits of \$2.9M/year are projected over the lifetime of the system.

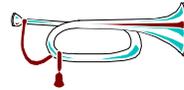
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## Real Testing Without Real Ammo

The Firing Impulse Simulator (FIS) provides dynamic loading on large caliber gun systems (105mm to 8-inch) to test the recoil system, gun cradle endurance and also shock load on weapon, fire control, and auxiliary components. It delivers up to 3 million pounds of impact to the gun, from 0 to 85 degrees elevation, up to 3 simulated rounds per minute. FIS saved \$20M during the first year and has projected future benefits of \$22M/year based on a cost of \$1,000/round in ammo and \$1,000/round in labor and range time.

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## Computer Generated Tank Targets

The Fire Control Test Complex (FCTC) consists of tank gunnery ranges and the Moving Target Simulator (MTS) to provide detailed characteristics of fire control systems, main weapons, and ammunition. It presents computer generated targets to the test item to characterize stationary tank/moving target fire control performances. Benefits are \$5M/year.

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## Non-destructive Testing Saves

The Simulation/Test Acceptance Facility (STAF) is a joint tester/developer project to develop a hardware-in-the loop simulator for testing millimeter wave radar guided missiles. STAF provides for non-destructive testing of live missiles with multiple computer-based test scenarios under simulated environmental conditions. It delivers benefits of \$7.8M/year.

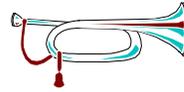
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### **MIST Improves Protective Suits**

The Man in Simulant Test (MIST) provides a simulation of actual chemical threat environment while testing suit integrity and full motion activity of man in the environment to assess protection parameters of protective clothing. Using the MIST in conjunction with swatch testing provides quick turn around of data to assess design and fabric parameters and identify potential improvements. MIST replaces methodology that restricts movement, disrupts internal airflow, and compromises suit integrity. It delivers a far more realistic and believable simulation with benefits of \$1.25M/year.

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### **ADM Has Environmental Payoff**

The Atmospheric Dispersion Model (ADM) simulates an XM-56 smoke generating system test in response to local environmental regulation that precluded the military from conducting large screening tests. It has net benefits of \$339K/test (Costs \$21K in lieu of conducting 12 field trials that would have cost \$360K).

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### **Tools Allow Automated Stimulation**

The test stimulator is a suite of tools which provide non-radiating simulated digital message traffic input to challenge large network, computer-based Command, Control and Communications Systems. It also provides data control, monitoring, and collection services which are consolidated by the Test Control Center, delivering a benefit of \$1M-3M per test.

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The AMC Cost Busters Bugle is a newsletter designed to share ideas and success stories throughout the Command. If you have a good news story to include, see your local Efficiency Czar or call Mr. Phil Brodowski at AMC Headquarters on DSN 767-1104.