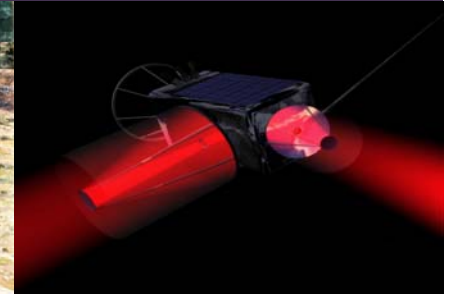
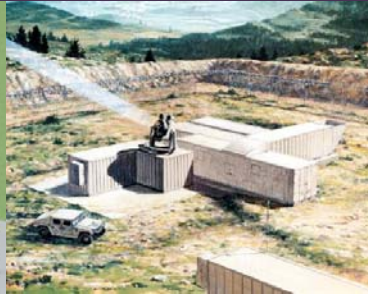




Tri-Service Study Update



T-SS Update Summary

- Discovered, scoped, and prioritized 52 T&E infrastructure shortfalls for directed energy weapon systems
- Focused on HPM and HEL directed energy weapon systems
- Queried the Air Force, Army, and Navy for input while identifying directed energy T&E shortfalls
- T-SS Final Report can be requested via the DETEC website (www.detecteam.org)

In 2003, the Test Resource Management Center's (TRMC) Central Test and Evaluation Investment Program (CTEIP) funded the first DETEC Tri-Service Study (T-SS) that discovered, scoped, and prioritized T&E infrastructure shortfalls for DE weapon systems. Focusing primarily on high energy laser (HEL) and high power microwave (HPM) systems, the T-SS identified 88 shortfalls, of which 37 were grouped into 12 high-priority capabilities. These high-priority shortfalls served as the foundation for the Directed Energy Test and Evaluation Capability (DETEC) project.

With continued progress in DE weapon systems and the inability to procure capabilities to address all of the initially identified shortfalls, many deficiencies remain in the T&E infrastructure required to support the full spectrum of DE weapon systems testing. The 2006 CTEIP-funded T-SS Update revisited the DE T&E infrastructure requirements, revalidated previously identified shortfalls, and identified new and unique requirements, capabilities, shortfalls, and solutions.

T-SS Update Overview

The T-SS Update followed the same process as the original T-SS with adjustments made from lessons learned. The initial step compiled a list of HPM and HEL DE weapons that could potentially enter testing in the next 12 years. (The study did not include other types of DE weapons, such as acoustical and neutral particle beam weapons.) From this list of DE weapon programs, the T-SS Update team developed test concepts and identified T&E infrastructure requirements. The Air Force, Army, and Navy reviewed, assessed, and documented these items during three Service-specific workshops. These workshops allowed the Services to enhance their specific DE weapon system test concepts to the most accurate compilation of their Service's policies and requirements.

After identifying the joint T&E requirements and test concepts, the Major Range and Test Facility Base (MRTFB) sites each received a survey to document their existing DE T&E capabilities. The T-SS Update then compared the identified requirements against the existing capabilities to identify shortfalls.

T-SS Update Results

The T-SS Update team identified 52 shortfalls, which were prioritized as 44 high-priority (H), 3 low-priority (L), and 5 Science & Technology (S&T). Fourteen of the shortfalls were revalidated from the original 88 shortfalls identified in initial T-SS. Related shortfalls were grouped to form combinations (shortfalls with similarities) and synergies (results in cost savings). The team ranked the high-priority groupings from 1 to 17 based on discussions that occurred during the three T-SS Update Service Workshops and subsequent meetings.

List of DE Weapons and Concepts*

HEL System	Mission
Aircraft Self-Protection (ASP)	Bomber self-protection; surface-to-air (SAM), air-to-air (AAM), Man-Portable Air-Defense Systems (MANPADS), fighters; Protection of aircraft from anti-aircraft threats
Advanced Tactical Laser (ATL)	Airborne precision strike of ground targets, hostage rescue scenarios; Short-range airborne naval asset protection against above-water threats, carrier/land-based
Airborne Laser (ABL)	Theater Ballistic Missile (TBM) defense
Ground-based Laser with Relay Mirror	Airbase defense
Joint DE Maneuver Support System (JDEMSS)	Standoff mine neutralization and unexploded ordnance
Joint Multi-mission DE Protection System (JMDEPS)	Detect, track, engage, and destroy RAM threats, meet other evolving US Army mission needs; Anti-Tank Missile, (ATGM)/Rocket Propelled Grenade (RPG)
Joint Multi-mission DE Strike System (JMDESS)	Area denial to aircraft, unmanned aerial vehicles (UAVs), helicopters, and other light aircraft
Ship-based Area-defense Laser (SBADL)	Medium-range ship protection; Anti-ship cruise missile (ASCM), TBM
Ship-based Self-defense Laser (SBSDL)	Short-range ship self-protection; ASCM
HPM Systems	Mission
Active Denial System (ADS) – Airborne	Non-lethal crowd control
ADS - Vehicle	Stops ground vehicles at standoff range without harm to occupants
ADS – Ship	Non-lethal crowd control
HPM Airbase Defense System (HADS)	Rocket Artillery Mortar (RAM), Precision Guided Munitions (PGM); aircraft; protection of aircraft departing, arriving, and orbiting airbases from man portable ground-to-air missiles
Counter-improvised Explosive Device (IED)	Neutralize improvised or designed explosive devices targeting maneuver elements
Counter-mine	Surface and buried landmines
Point Protection	Protect high value facilities from individuals carrying/wearing bombs; IED vests and package

T-SS Update Shortfalls

Priority	DE Type	Shortfall
H1	HPM	Sensor Suite #2
H2	HPM	Sensor array for C-IED Testing
H3	HPM	Measure fields in ground effect; supports C-mine and C-IED, continuous wave (CW) and pulsed
H4	HPM	Measure fields at point inside target, near chip
H5	HPM	Human Instrumentation for ADS
H6	HPM	Modeling and simulation
H7	HEL	CW Solid State Laser (SSL) lethality testing
H8	HEL	CW irradiance profile of ground targets
H9	HPM	Overhead illumination, simulate air-to-ground attack
H10	HPM	Non-intrusive sensor, measure fields inside target
H11	HPM	Chamber test capability - explosive equivalent substitute; adds 6-10 GHz
H12	HEL	Irradiance and temperatures of in-flight targets using inexpensive, reusable target boards
H13	HEL	Near/in/along beam path quality (optical turbulence, aerosol content, transmissivity)
H14	HPM	Sensor Net for civilian and military infrastructure
H15	HPM	Sensor Suite #3
H16	HPM	Non-intrusive sensor, CW inside target
H17	HEL	Imagery of airborne targets

T-SS Update Status

DETEC completed the T-SS Update in December 2007. The T-SS Update Final Report is available for interested parties on the DETEC website (www.detecteam.org). The final report can help test managers and infrastructure planners identify potential problems specific to DE weapon testing early enough to implement solutions.

The DETEC T-SS Update process will be repeated every two to three years to keep the findings current and continue to develop detailed Joint Roadmaps and Service-unique requirements. Continuing T-SS updates will minimize instances in which the first program to identify a problem must pay for the solution and will avoid duplication of efforts when separate DE program face and attempt to solve similar DE test issues.

About DETEC

DETEC is addressing joint service DE weapon system T&E infrastructure needs and implementing solutions to these identified needs. DETEC develops and fields capabilities to address high-priority shortfalls identified in the 2004 CTEIP-funded T-SS.

The DETEC Systems Integration Contractor (SIC), Science Applications International Corporation (SAIC), implements the DETEC project by working with Government and industry teammates to develop functional specifications for certain DE T&E infrastructure capabilities. The SIC acquires these capabilities in competitive procurements and integrates the capabilities into the MRTFB to help meet the testing requirements for current and future HEL and HPM weapon systems. ■

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*This list of DE programs has been consolidated for this factsheet. The complete list of DE weapons and concepts is available in the T-SS Update Final Report.