

Dreams™



**TEXAS CENTER FOR
APPLIED TECHNOLOGY**
TEXAS A&M ENGINEERING EXPERIMENT STATION



The Disaster Relief and Emergency Medical Services (DREAMS™) project was comprised of a consortium of scientists, medical professionals, and engineers from The Texas A&M University System and the University of Texas Health Science Center at Houston and was funded by the U.S. Army Medical Research and Material Command. Although the research team included personnel from two universities, the project fostered a one-team approach to meeting the research objectives. The goal of DREAMS™ was to improve the diagnosis and treatment of critically ill or injured persons in remote disaster or battlefield locations. Texas A&M System researchers and engineers worked on two

components of the DREAMS™ program: Digital EMS and Detection and Remediation of Chemical Threat Agents.

The objective of the DREAMS™ Digital EMS project was to improve the diagnosis and treatment of patients by expediting their access to medical experts. Integrating multiple cutting edge communications and medical technologies, Digital EMS was the DREAMS™ component that provided a “virtual” presence of a physician at a remote site. It is possible to improve patient survivability and reduce morbidity by allowing the physician to telementor on-scene medical professionals and first responders that may be more limited in their knowledge and abilities.

Texas A&M System researchers were responsible for the design, setup, testing, and integration of medical equipment, communications hardware, and software in the Digital EMS ambulance. Research progressed from initial prototyping, transitioned to fielding four ambulances: three civilian and one military, as well as a scaled-down version of the technology referred to as “DREAMS™ in a box.” Verification and validation, adapting, and upgrading was based on feedback from the deployments in Liberty County, Texas, and Brazos County, Texas. University of Texas researchers evaluated the medical effectiveness of the fielded Digital EMS prototypes and provided the information to Texas A&M System researchers to integrate recommended improvements. The Digital EMS technology was easily integrated into a mobile hospital unit to provide state-of-the art communications technology to existing mobile hospitals.

The Detection and Remediation of Chemical and Biological Threat Agents component of the DREAMS™ project involved developing technologies that could be used by Digital EMS to obtain accurate environmental surveys of emergency scenes for threat agents, and develop environmentally neutral technologies for the decontamination and renewal of chemical and biological warfare or terrorism. During a disaster response or military action, it is of greatest initial concern to be able to determine whether chemical or biological weapons have been involved. This aspect of the program was designed to identify and to develop technologies to expedite the emergency response required for the proper management of a chemically-contaminated site (and eventually biologically-contaminated sites) that might result from domestic accidents, terrorist activity, or military action.

The DREAMS™ technology was designed, developed, and tested over an eight year period with a \$16.9 million contract. The military relevance, as well as the public benefit, from an enhanced ability to receive treatment in trauma or mass-casualty situations made this project critical to the state of Texas and the nation. The technology can be used as a triage station, treatment facility, or a strategic communications facility (among other applications), and offers enormous potential in a variety of mass casualty or trauma situations today.

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.

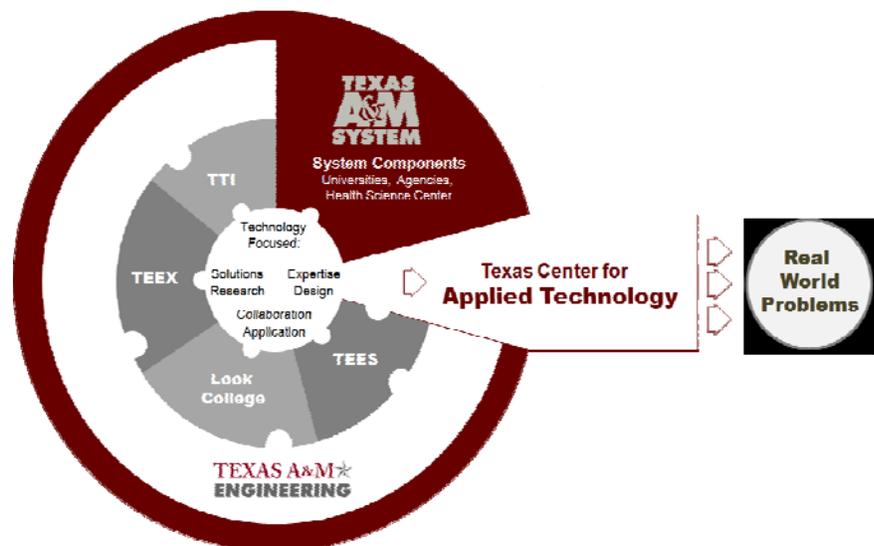
TCAT is part of the Texas A&M Engineering Experiment Station (TEES), a member of The Texas A&M University System. The A&M System is one of the largest and most comprehensive systems of higher education in the United States. Through a statewide network of eleven university campuses, seven state agencies, 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: tcatadministration@tees.tamus.edu

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

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TEXAS A&M
UNIVERSITY
SYSTEM