



# MODELING AND SIMULATION

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Teledyne Brown Engineering has supported every branch of the United States military and several foreign allies with construction of models and simulations, simulation-based testing, training, and evaluation services.

## MODELING THE BATTLEFIELD:

### Expertise and Tools Spanning Concept Analysis to Operational Support

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#### Extended Air Defense Simulation (EADSIM)

EADSIM is a many-on-many simulation of air, space, and missile warfare developed by TBE for the U.S. Army Space and Missile Defense Command. EADSIM is an integrated tool that supports joint and combined force operations and analyses. EADSIM is used by operational commanders, trainers, combat developers, and analysts to model the performance and predict the effectiveness of multi-domain forces on the battlefield.

EADSIM supports much faster than real time analysis, as well as real time support to Wargames/Exercises. EADSIM incorporates user-driven capabilities, with a proven, rapid-response capability to develop and support the model to meet evolving user needs. EADSIM is one of the most widely used simulations across the Department of Defense.

#### Physics-Based Models and Simulations

TBE has extensive experience in the development, utilization, and maintenance of physics-based models. Our team has fielded simulations pertinent to air, space, and missile defense analyses, algorithm development, and Hardware-in-the-Loop (HWIL) systems. For over 45 years, we have been a trusted partner in the creation of electro-optical/infrared (EO/IR) signature tools used in feasibility studies, design, and testing of Missile Defense Systems. Our products range in size from real-time, in-line signature engines to composable, flexible, scalable, and configurable HWIL distributed systems that support full scale simulations, ground tests, and live fire events. TBE supports approximately 700 users of industry standard EO/IR signature simulations of targets and threats.

Recent projects include hypersonic weapon analysis/simulation, satellite reconnaissance sensor emulation, analysis of high energy laser effects on missiles, and multi/hyperspectral remote sensing data exploitation for EO/IR scene generation.

# MEDICAL PLANNING

TBE and the Naval Health Research Center (NHRC) have been developing medical logistics/planning tools together since 2001. The resulting MPTk and JMPT programs have been accredited by the DoD as medical planning and programming tools. Both are the joint standard for medical modeling and simulation.

## Medical Planners' Toolkit (MPTk)

This four-component suite of software tools provides a standardized, science-based approach to medical support planning across the spectrum of military operations.

### 01 - Patient Condition Occurrence Frequency

Determines illnesses and injuries

### 02 - Casualty Rate Estimation Tool

Forecasts casualty rates during military operations for medical and personnel planning

### 03 - Expeditionary Medical Requirements Estimator

Estimates high-level requirements for theater hospitalization and personnel replacements by specialty and grade.

### 04 - Estimating Supplies Program

Forecasts medical supply requirements

## Joint Medical Planning Tool (JMPT)

This software simulation program models the flow of patients from the point of injury through more definitive care. JMPT is also an operations research tool that supports systems analysis, operational risk assessment, and field medical services planning.

### 01 - Simulate Patient Condition and Flow

Assess the impact of user-defined patient streams on a network of medical facilities

### 02 - Prioritize Patient Treatment and Evacuation

Determine routing of patients based on severity of injuries

### 03 - Model Utilization of Transportation Assets

Characterize fleet/network capacity and constraints

### 04 - Develop Plans and Reports

Produce graphic charts and tabular reports showing medical facility status, patient disposition, and resource utilization

Decades of specialized modeling and simulation experience resulting in industry-standard products.



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