UNITED STATES ARMY
SPACE AND MISSILE
DEFENSE COMMAND

Extended Air Defense Testbed

Summary

- Partitions perception from truth and propagates perception.
- Models the Joint Data Network from message creation through transmission on the modeled JTIDS net to receive and interpret the message. Other network architectures are supported by the ruleset construct and message data tables.
- EADTB offers a robust suite of on-line tools for visualization and numerical diagnostics.
- Possesses an extensive independent verification and validation legacy for library-resident system models and for the common model set, which provides the building blocks for user construction of the system models.
- Interoperable via High Level Architecture and Distributed Interactive Simulations processes.

Offers excellent analysis capability from subsystem through system-level and system-of-systems interoperability, including all aspects of communication for Battle Management Command, Control, Communications, Computer, and Intelligence (e.g. Missile Defense Agency C2BMC) applications.

The Extended Air Defense Testbed is a robust, multi-purpose, event-driven modeling and simulation toolkit with emphasis on user control and flexibility. The EADTB supports modeling of systems across the full military spectrum from land-, sea-, and aerospace-based. EADTB is an object-based model providing multiple levels of detail within a single scenario, enabling emphasis to be focused in the areas of interest. Users control the simulation logic using EADTB's system-level ruleset, logic language. Scenarios, experiments, and exercises can be constructed/modified from master libraries of existing models, or they can be built "from scratch" by the users.

Extended Air Defense Testbed

Technical Interoperability and Matrix Center

The primary application for users of Extended Air Defense Testbed (EADTB) is detailed analysis of system interoperability. The EADTB can assist the operational commander through rapid analysis and turnaround of contingency scenarios and by providing a "real world feel" to users. It can support the combat developer through analyses focused on procedures and operation, command structure, information management, force structure, and parametric performance. It can support materiel developers through analyses focused on the relationship of system design (with emphasis on networks and interoperability) to combat value in the broad military context.

The object-based simulation architecture supports breadth and detailed analytical application, by allowing the user to completely describe and develop system models called Specific System Representations (SSRs). The user can then place numbers of these simulated systems on a host gameboard without a requirement for rewrite of other existing system models or modification of the supporting architecture. By supporting a wide range of levels of detail in model development, EADTB offers the flexibility of simultaneous use of high- and low-detail SSRs in a single simulation exercise.

This flexibility allows the analyst to apply a high-detail SSR to simulate a key system, such as a Terminal High Altitude Area Defense (THAAD)/PATRIOT task force at a critical location, while simulating the surrounding theater context with a lower-detail and/or higher-aggregation representation. Thus, the EADTB can simultaneously assess both system performance and value added at a higher echelon, reducing the need for multiple simulations and the attendant requirement for model harmonization. The EADTB software and ruleset language has been prepared to model the MDA Ballistic Missile Defense System (BMDS) at a wide range and level of detailed, interoperable systems and BMDS weapon system elements.

By placing model-development power in the hands of users, the EADTB has stimulated the ongoing development of a range of system models by system proponent agencies across all services. These developers along with the system proponent agencies verify and validate their EADTB models for a documented range of uses and contribute them to an SSR library, which is accessible (when specifically approved) by EADTB users. The EADTB is thus the first simulation to offer access to a library of system models contributed and certified by a diverse group of joint-service and, potentially, international sources.

The joint-service EADTB SSR library, combined with Distributed Interactive Simulation (DIS) and High Level Architecture (HLA) capability, offers a number of benefits to DIS/HLA exercises. An analyst assembling the elements of such an exercise can build a synthetic environment on the EADTB gameboard to support a mix of live, virtual, and high fidelity constructive participants. If a participant of another simulation is not available for any reason, the analyst can substitute a certified EADTB SSR. In addition, the library will supply generic models of critical elements such as Command, Control, and Communication (C3) sites, which can be added to support interoperability among diverse participants.

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