Advanced Warfighting Simulation (AWARS)

AWARS is a constructive[1], deterministic[2], unit-level simulation representing land and amphibious warfare from brigade combat team (BCT) to division or JTF level. The level of resolution varies based upon the level of unit represented. Resolution can be down to battalion, company, or platoon, depending upon the analytic needs and time available to develop a dynamic scenario. One can consider AWARS units as its entities.[3] Unit entities act upon information developed through status reporting and intelligence gathering operations. This information serves as the basis used to execute tactics that achieve assigned objectives. TRAC designed AWARS to operate human-in-the-loop, as part of a federation of models, or closed-loop. Typically, TRAC uses AWARS closed-loop for analysis.

AWARS has the essential capabilities necessary to represent a Joint and combined arms military operation. Key functionality in AWARS includes Joint/Army sensors, intelligence, ground maneuver, direct/indirect fire, fixed/rotary wing, dismounted operations, amphibious operations, communications, air defense, sustainment, maintenance, engineers, HUMINT/ambiguity, and terrain effects. AWARS uses validated, data-driven algorithms for fundamental models, such as sensing and attrition. TRAC uses certified performance data from the Army Material System Analysis Activity (AMSAA) as input to these models. Operational data (for example, tactics, techniques, and procedures (TTP)) that drive the combat actions/activities come from subject matter experts, such as the TRADOC Centers of Excellence and the TRADOC G2 Intelligence Support Activity (TRISA).

TRAC uses AWARS as one of its analytic tools to enable informing decisions about concept development, acquisition, force design, force mix, and/or TTP development. AWARS is not a predictive simulation; rather, it is a comparative analysis tool. It enables an analyst to understand how a specific capability or concept might contribute to a military operation relative to a baseline. TRAC conducts effectiveness analysis of military operations and as such TRAC's combat simulations focus on representing the effect of a capability rather than real-world representation (that is, modeling the physics of a missile in flight is not required to understand the effect a missile has in a combat operation). The effect, as the performance characteristics and the operational employment determine, provides the means for analysts to conduct comparative analysis.

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[1] The outcomes of a run constructed from the sequencing of events, factors, and rules. People set up the rules beforehand and do not interact with the simulation during the run. Constructive simulations operate closed-loop.

[2] Pertaining to a process, model, simulation, or variable whose outcome, result, or value does not depend upon chance. Department of Defense (DOD) Modeling and Simulation (M&S) Glossary, 2011.

[3] Any component in a system that requires explicit representation in a model. Entities possess attributes denoting specific properties. DOD M&S Glossary, 2011.