



# Infantry Warrior Simulation (IWARS)

## General Description:

The IWARS is a constructive, force-on-force model for assessing the combat worth of systems and sub-systems for both individuals and small unit dismounted warfighters in high-resolution combat operations. IWARS is being co-developed by the Natick Soldier Center (Natick) and the Army Materiel Systems Analysis Activity (AMSAA). The IWARS is PC-based software, coded in C++, which will give analysts a robust capability to model lethality, survivability and mobility, and the capability to model Military Operations in Urban Terrain (MOUT) environments, C4I, and sustainability. IWARS is being built as an assimilation of the Natick Integrated Unit Simulation System (IUSS) Version 4 and the AMSAA Infantry MOUT Simulation (AIMS) models.

## Objectives:

To provide a robust modeling capability needed to conduct integrated, multi-domain analyses that allow the complex relationships between soldiers, their equipment, and the battlefield environment to be explored. To enable program managers to make more informed decisions through the application of Simulation and Modeling for Acquisition, Requirements and Training (SMART) and Simulation-Based Acquisition (SBA) to reduce the overall acquisition time, avoid program costs, reduce program risk and to support development of better equipment.

## Facts:

Within the US and the international Warrior Systems modeling communities, the IUSS and AIMS software are acknowledged as being highly capable tools able to support highly detailed research, development, and acquisition (RDA) analyses of individual warrior systems. The merging of their capabilities to create IWARS provides Project, Product, and Program Managers with a unique and powerful tool to assess candidate systems, subsystems, and components for further development. Analyses could be performed to support combat worth assessments of items and systems, technology down-selection, trade decisions, investment strategies, risk reduction strategies, focused test and evaluation and requirements validation.

The IWARS provides a capability to provide needed analysis where live fire or large-scale testing would be prohibitive. Further, environmental and psycho-physiological elements (such as heat stress, fatigue, load, hydration, dynamic weather and terrain, plus variable lighting conditions) could be modeled using IWARS.

Force structure, equipment distributions, combat threats, measures of performance and effectiveness, component system specifications, and scenario vignettes act as inputs to the analyses throughout the integrated materiel evaluation process. Moreover, analyzing data from IWARS simulations will allow analysts to gain insight on how changes to doctrine could improve soldiering tactics, techniques or procedures.

IWARS will enable the assessment of C4ISR technologies through the use of an "Intelligent Agent" architecture that is focused on the individual and small unit. These intelligent autonomous agents can sense and effect changes in their environment, acting on their perceptions of current world "state" instead of "ground truth." This will greatly enhance our ability to include important real world characterizations and the impacts of C4ISR technologies with the traditional foci of lethality, survivability and mobility.

## Schedule:

During FY 04-05, work on IWARS will focus on improved MOUT and human behavior representation to allow for more robust assessments of the combat worth of C4I technologies, sensors, displays, netted fires, and computer network systems. Regular technical interchanges will be held with One Semi Automated Force (OneSAF) model developers for the benefit of both programs through potential code reuse. Finally, IWARS will be linked with COMBAT<sup>XXI</sup> model for use in Land Warrior (LW) Analysis of Alternatives (AoA).

## Point of Contact:

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