

At a glance

What MEOT is

MEOT fuses information about the environment (distance, elevation, terrain, meteorological) with the latest scientific support, guidance, and models on energy expenditure, hydration, altitude, cognitive performance, and injury prevention in a decision support tool for mission planners.

How MEOT works

- Provides a map based interface to explore mission requirements and conditions.
- Incorporates GIS data including elevation and terrain on targeted environment.
- Includes detailed information on meteorological conditions.
- Calculates human performance costs against these conditions.
- Allows mission planner to explore details of selected routes and explore alternative routes, waypoints.
- Provides anticipated costs (calories, hydration, etc) and advisory information on selected routes.

What MEOT will achieve

- Enhanced mission effectiveness and training efficiency.
- Improved speed and efficacy of planning and plan evaluation.
- Provide accurate detailed estimation of mission costs.

Environmental and meteorological conditions have a profound impact on human performance.

Appropriate nutrition and hydration are essential for energy production and injury prevention. Rugged mountains and lack of infrastructure in Afghanistan complicate food and water sustainment operations for the dismounted infantry.

However, no tools exist to incorporate these factors in an effective form for mission planners.

The goal of MEOT is to provide accurate and detailed information to the user, the mission planner, to assist in the identification and mitigation of potential mission performance issues.

Based upon the scientific literature in human performance and interviews with current mission planners, three primary categories of performance variables have been identified as associated with mission planning: environmental, physiological, and cognitive.

MEOT fuses these variables with detailed information on the mission environment and conditions in an interactive decision support tool that provides the user the opportunity to manipulate variables and review a variety of potential outcomes for the mission based upon these factors.

Based on selected mission objectives and conditions, MEOT provides:

- Cost estimation for food and hydration requirements.
- Advisories including alerts / warnings when scientifically based guideline limitations are approached or exceeded (i.e., heat work/rest cycles).
- Direct estimates of trip duration, recommended waypoints, and intervals for rest and refueling.

The key functions of MEOT include estimating the effect of decision alternatives on mission effectiveness, predicting the likelihood of injury based on task requirements and route planning, and providing route trafficability estimates for energy consumption. MEOT will enhance mission effectiveness via human performance-shaping functions and improve the efficiency of the mission planning process.



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Research Challenges and Opportunities:

- Many human performance equations are based upon laboratory studies which require field validation.
- Integration of scientific data needs to be done, transparently, effectively and efficiently for mission planners.
- Some models require measurements of internal physiological states.
- Few field studies have investigated the cognitive component of a patrol during and following the patrol, and the interaction with physiology.