



The Red-Force Deployment, Evaluation, and Modeling Tool (R-DEM). The R-DEM Tool represents Red-Force (Opposing Forces) ballistic and cruise missile operations. R-DEM automatically generates operationally realistic OPFOR deployment scenarios/Enemy Courses of Action (ECOAs) based on known garrison locations, Tactics, Techniques, and Procedures (TTPs), Red Order of Battle (OoB), user-defined targets (defended assets), regional terrain and feature data and exports the adversary test cases in either ASCII text format, Microsoft Excel spreadsheets, or Google Earth layers. Additionally, R-DEM quickly and efficiently tests/evaluates 3rd party test cases for operational realism and accuracy, and generates easy to read and understand discrepancy logs. If you need to represent adversary ballistic missile operations, R-DEM is the tool for you.

All Missile Defense representation begins with an accurate threat, regrettably Red-Force scenarios often fall short in many areas; incorrect garrison order of battle, incorrect launch locations, incorrect launch rates and/or time on target and raid sizes, and launches that don't match launcher or missile inventories as deployed. The R-DEM tool enables user's to:

- Accurately stimulate BMD systems for system effectiveness studies
- Test/Evaluate sensor search plans
- Test/Evaluate 3rd part test cases
- Accurately stimulate ground tests, digital simulations, and warfighter exercises

Ballistic Missile Operating Area (BMOA). R-DEM users define each BMOA and the associated deployed missile systems. Figure 1 identifies a notional BMOA definition.

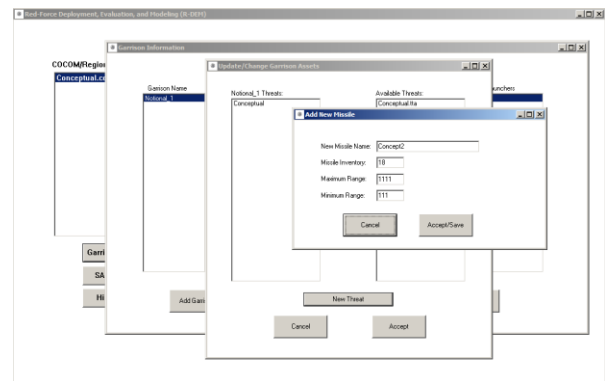


Figure 1 BMOA Definition

Threat Tactics and Order of Battle. R-DEM users define the threat Operational Tempo (OpTempo), Inventories (Order of Battle), support equipment and facilities, and force protection as well as the surrounding terrain to predict how the adversary will operate and engage blue force's defended assets; see Figure 2.

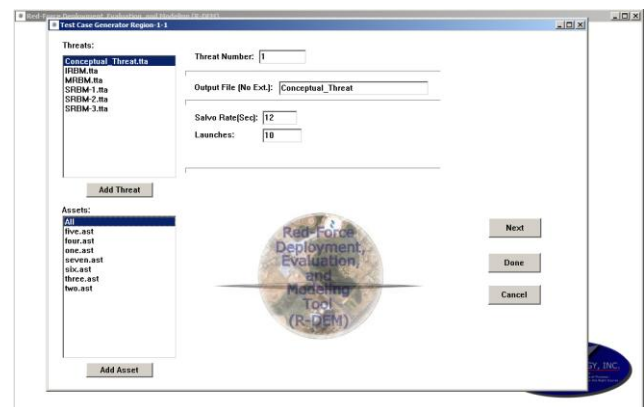


Figure 2 Adversary OPTEMPO

The R-DEM Tool uses actual flight trajectory data to determine the "Time on Target" (ToT) for simultaneous impact events. The user simply selects the threat types to associate with the ToT event, and the number of systems involved. R-DEM tool imports the INTEL Community's 58-Col BMRD trajectories. Users may customize trajectories, or use Ballistic Missile Reference Document (BMRD) threats; see Figure 3.

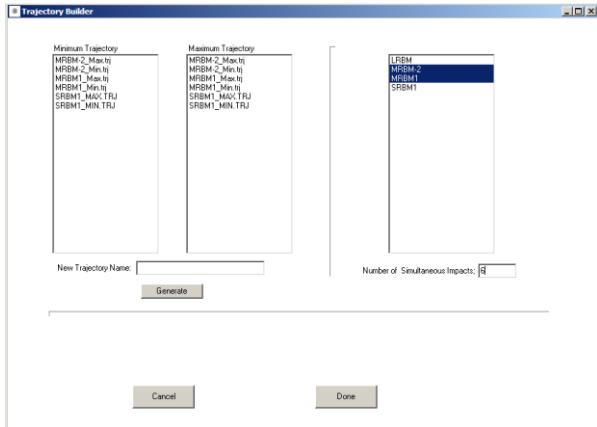


Figure 3 Threat Trajectory Builder

By selecting and prioritizing blue targets (defended assets), the user is able to generate COAs that are operationally representative; see Figure 4.

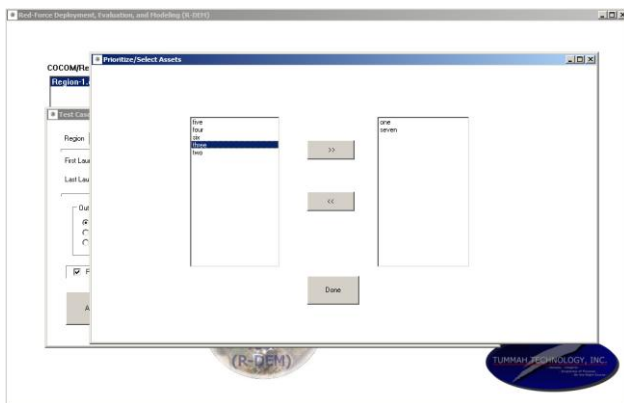


Figure 4 Asset Prioritization

Scenario Development. The R-DEM Tool develops red-force scenarios by incorporating the threat definitions into environmental data such as terrain and feature data using the ESRI Grid data format, and is a "Go/NoGo" grid of the BMOA area. To ensure operational accuracy, the R-DEM Tool evaluates each generated test case for operational realism.

Output/Products. The R-DEM Tool generates multiple log files to document each test case/ECOAs as well as MS Excel spreadsheet files. Users may view each scenario/ECOAs on Google Earth maps; See Figures 5 and 6.



Figure 5 Adversary Launch Position



Figure 6 Adversary Launch Position

Output/Products. Users may also incorporate R-DEM products with ADEM* data products to represent complete deployment operations from production facilities to launch and concealment operations of Red Forces.

* ADEM is the **Adversary Deployment Exploitation Model** also developed by Tummah Technology, Inc.



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