

## **Hardware-in-the-Loop Tools for Next Generation Multi-Spectral Missile Systems**

James B. Johnson, Jr.  
Team Leader, Radar Systems Group  
U.S. Army Redstone Technical Test Center  
256-876-5669  
[James.Johnson@rtc.army.mil](mailto:James.Johnson@rtc.army.mil)

Jerry A. Ray  
Systems Simulation and Development Directorate  
U.S. Army Aviation and Missile Command  
256-842-9506  
[Jerry.A.Ray@Redstone.army.mil](mailto:Jerry.A.Ray@Redstone.army.mil)

### Abstract

The Multi-Spectral Missile Life-Cycle Test Facility (MSMLCTF) is a single hardware-in-the-loop (HWIL) simulation complex that will uniquely have the capability to perform life-cycle simulation/testing on next-generation multi-sensor missile systems. The facility will allow for simulated end-to-end flight tests in a non-destructive manner as well as complete evaluation of all missile electronics and software. This testing will be performed at both the All-Up-Round (AUR) level and the Guidance Section (GS) level. The MSMLCTF will be used to support the Army Transformation by evaluating operational flexibility before fielding, reducing life-cycle costs, improving system performance by evaluating technology insertions and evaluating interoperability impacts. This paper gives a general description of the MSMLCTF, cost tradeoffs between live flight testing and simulation, and an update on facility development status.