



Space Modeling and Simulation Focus Area Collaborative Team



Summary

- Space Force Management Analysis highlights the need for space representations in Army M&S
- SMDC leads Focus Area Collaborative Team to determine improvements to Army M&S
- Army Model and Simulation Executive Council approved Space FACT roadmap in October 2002
- Development efforts under way – Space Based Radar (SBR) capabilities/space improvements in experimentation/satellite simulation representation/Space Operating System in simulation

Enabling the Army to leverage space through improved space representations in Army's Models and Simulations.

The Army formed the Space Modeling and Simulation (M&S) Focus Area Collaborative Team (FACT) to address deficiencies in space representations within Army M&S. Comprised of both space operators and M&S community experts, the Space M&S FACT identified, researched, and coordinated simulation technology projects to remedy Space M&S deficiencies key to future Army priorities. The FACT determined the space voids in simulation and identified relevant Space M&S activities requiring modification. Current and scheduled FACT sponsored activities provide simulation technologies and implementations to enable accurate space representations in Army M&S resulting in better planning and improved operational analyses.

The Army formed the Space Modeling and Simulation (M&S) Focus Area Collaborative Team (FACT) to address deficiencies in space representations within Army M&S. The Army acknowledged this M&S deficiency during the Sept. 4, 2001, Space Force Management Analysis (FOR-MAL) Review where the Vice Chief of Staff of the Army directed Headquarters, Department of the Army (HQDA) to prepare a "roadmap or action plan" for space representation in Army M&S. The Army G-3 tasked the Space and Missile Defense Command (SMDC) to lead this effort with assistance from the Training and Doctrine Command (TRADOC), the Army Materiel Command (AMC), and the Army Model and Simulation Office (AMSO). Comprised of both space operators and M&S community experts, the Space M&S FACT identified, researched, and coordinated simulation improvements to remedy Space M&S deficiencies key to future Army priorities.

Mission

Facilitate the resolution of deficiencies in Army Space M&S representations and capabilities.

Objectives

- Assess current space M&S capabilities
- Identify shortcomings in space M&S capabilities in terms of knowledge, algorithms, and data
- Define simulation technology research goals
- Form a product-oriented team of Space M&S stakeholders
- Develop, coordinate, and maintain a coherent research program of action that integrates and leverages appropriate DoD component efforts
- Conduct outreach efforts (DoD, industry and academia) to ensure interested party awareness and provide the opportunity to participate in the Space M&S action plan
- Solicit, review, and rank research project proposals responding to the Space M&S action plan
- Provide Space M&S research funding advice to the Army M&S Executive Council (AM-SEC) and the Army M&S Office (AMSO)
- Inform the domain leaders, the AMSO and the AMSEC of progress

The Army Space M&S FACT determined the top five Space M&S functional needs to be: Intelligence, Surveillance, and Reconnaissance (ISR), Space Communications, Tactical/Theater Ballistic Missile (TBM)/Weapons of Mass Destruction (WMD) Early Warning, Global Positioning, and Blue Force Tracking. With these top needs, the Space M&S FACT identified relevant Space M&S activities associated with current force training, Future Combat Systems (FCS) experimentation, or the introduction of new space systems into DoD for Future Forces. AMSEC approved the Space M&S FACT roadmap in October 2002 and endorsed the Initial Capability Document (ICD) in October 2003.

The FACT has begun efforts to improve Space M&S. The first of the research projects developed an algorithm to represent the positions of satellites only when they are needed by the simulation. This "non propagation" method of space representation, Generalized Representation of Space-based Platforms (GRoSP), calculates position and time stamps for spacecraft. The Space FACT is also supporting experimentation and training capabilities with ISR support, OPFOR Satellite Representation, and integrating the Space Operating System in simulation. Other efforts include incorporating Space Based Radar (SBR) capabilities in a constructive simulation, Advanced Warfighting Simulation (AWARS) and providing the simulation community access to a space server. With these efforts and additional improvements, better space representation in Army simulations will lead to realistic leveraging of space capabilities and functions for experimentations, development, and training. These innovations will lead to a better equipped, better trained, more knowledgeable, and, hence, more lethal force.



For more information, please contact:
U.S. Army Space and Missile Defense Command
Public Affairs Office
P.O. Box 1500
Huntsville, AL 35807-3801
Phone: 256-955-3887
Fax: 256-955-1214
Email: webmaster@smdc.army.mil
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