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Title: Wargaming, AI, and the Missing Middle: Building the M&S Ecosystem for Decision Advantage

Wargaming is receiving renewed attention across the defense community, not because it disappeared, but because more activities are now being described, packaged, or positioned as wargaming. Across training, experimentation, operational planning, autonomy development, and AI-enabled decision support, defense organizations are looking for better ways to reason through complexity, test assumptions, explore options, and support decisions under uncertainty.

At the same time, modeling and simulation is being asked to do more than ever before. M&S is no longer confined to training systems or standalone simulations. It is increasingly expected to support collective training, mission rehearsal, wargaming, operational analysis, campaign experimentation, autonomous systems development, synthetic data generation, and decision support. This convergence creates significant opportunity, but also risk. Without a coherent foundation, each effort becomes another disconnected tool, impressive demonstration, or narrowly scoped integration that must be rebuilt for the next use case.

The problem is not simply a lack of innovation. In many ways, the defense community is facing the opposite problem. New tools, platforms, algorithms, and prototypes are entering the market faster than government and industry can evaluate, validate, integrate, and operationalize them. Some are promising. Others are immature, duplicative, poorly validated, or disconnected from the operational problems they claim to solve. For users, the challenge is not finding more innovation; it is determining what can be trusted, reused, integrated, and scaled.

This presentation argues that the “missing middle” is the connective M&S ecosystem between individual technologies and actual decision advantage. It is the layer that allows scenarios, terrain, models, data, assumptions, behaviors, adjudication logic, and outcomes to be reused and inherited across mission activities. Without that layer, a wargame may produce insight that cannot inform future training; an autonomy test may use a synthetic environment that does not reflect operational constraints; an AI-enabled tool may generate persuasive outputs without traceable assumptions; and a training event may generate data that is never structured for future analysis.

A more connected M&S ecosystem changes that model. A scenario developed for collective training could become the basis for a wargaming vignette. A wargame could shape future training objectives or planning assumptions. An autonomy test case could inherit relevant terrain, threat behavior, weather, and rules of engagement from an operational scenario. Data collected during experimentation or mission rehearsal could support future analytics, AI development, and decision support. Each activity would still serve its own purpose, but the underlying foundation would allow the enterprise to preserve, reuse, and build upon prior work.

The presentation will explore the architectural, governance, and partnership principles required to build this ecosystem, including standards-based interoperability, modular integration, persistent scenario management, shared terrain foundations, data provenance, model validation, human-in-the-loop adjudication, and repeatable evaluation pathways.

Ultimately, the future of modeling and simulation is not just better simulations. It is a connected ecosystem that allows training, wargaming, experimentation, autonomy, AI, and decision support to reinforce one another rather than operate in parallel.