

Automation of Wargaming Capabilities

MCSC and MCWL enhance COTS wargame tools

by Luis E. Velazquez

The Marine Corps will soon build a state-of-the-art facility to better visualize the threat environment, gain competitive advantages, and simulate future operating environments. The center, which broke ground aboard Marine Corps Base Quantico, VA, this past May, will be uniquely designed to leverage modern simulation technologies to enhance the wargaming experience for Marines. Once complete in fiscal year 2024, the Marine Corps Wargaming and Analysis Center will enable better equipped and trained Marines with improved decision making on the battlefield.

The PM Wargame Capability program office at Marine Corps Systems Command (MCSC) is the lead program office for the Marine Corps to integrate technical and engineering capabilities in a new facility for hosting a state-of-the-art enduring program of record. While the program of record's new facility is a few years from initial operating capability, a near-term wargame has been researched via collaboration between Marine Corps Warfighting Laboratory (MCWL) and MCSC's Systems Engineering Acquisition Logistics team.

The MCWL Wargaming Division was in immediate need of a wargaming solution—enabling planners and decision makers to examine scenarios and outcomes across multiple facets of expeditionary advance base operations and, more importantly, the ability to run on premise at the MCWL facility

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at Quantico. Collaborative market research pointed to a commercial-off-the-shelf (COTS) capability that provides a broad set of technical innovation including products and services which can be leveraged to transform the Marine Corps Wargaming scenarios resulting in a secure and compliant solution while offering greater degree of flexibility.

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The COTS simulation tool, known as Command Professional Edition (PE), tool provides simulation of modern air, naval, and ground combat. The Professional Edition allows customization of platform information so government users can adapt parametric system data to classified levels. MCWL began using Command PE to support wargames in January 2020. It is also used on a small scale in Marine Corps University to support student wargames. Additional attributes of the Command PE tool discovered from the market research include:

- Recognized as a valuable addition to the Air Force toolset providing real time adjudication in the wargaming environment and has enabled rapid assessment of various new technology concepts.

- Model forces down to individual unit level (single ship/aircraft/submarine/buildings, individual tank platoons, infantry squad/section etc.).

- Breaks down units to their individual components (e.g. sensors, engines and comm links on an aircraft or ship).

- The level of conflict may scale from a simple 1 vs. 1 in realtime all the way to theatre-level and even global-scale engagements and can be run in accelerated time (trans-oceanic scenarios with thousands of active units are common).

- Simulations can be executed in either interactive mode (the user observes and interacts with the running simulation through a rich Windows GUI, where selected data is exported for realtime or deferred analysis) or in “headless” non-interactive mode (Monte Carlo) for massive-scale analysis and advanced applications such as machine learning.

The close collaboration between SEAL Modeling and Simulation (M&S) Office and MCWL Wargaming Division were instrumental in the identification of engineering enhancements, requirements, and contract vehicle to re-engineer the COTS product to provide more realistic Marine Corps behaviors in the tool to include:



25 February 2021, MCB Quantico, VA: MCSC with MCWL hosts software developmental progress review of specific technical enhancements pertaining to COTS wargame known as Command PE. The enhancements include: post-game data outputs, non-interactive analysis, and event reporting, passive radar emulation, and ground unit formations. The event was organized by the MCSC Chief Technology Officer Luis E. Velazquez. The industry partners KBR (prime) and Matrix Games (developer) provided an overview of the enhanced wargame capabilities and the timelines for meeting next round of developmental requirements to include advanced amphibious capabilities, mobile forward arming and refueling point, and cargo modules. Demonstration was attended by MCSC, MCWL, and Combat Development & Integration representatives to include Deputy to the Commander Mr. Edwin Stewart, Col Tim Barrick of MWL Wargame Division, and Chief of Staff Mr. Scott Lacey of MCWL. (Photo by Luis E. Velazquez.)

- Identifying multiplayer capability that enhances and accelerates the wargaming experience.
- Post-Game Data Outputs, Non-Interactive Analysis and Event Reporting, Passive Radar emulation, and Ground Unit Formations.

Marine Corps Systems Command recently hosted the project review with industry partners KBR (prime) and Matrix Games (developer) that provided the Marine Corps with an overview of the enhancements made to the COTS wargame and timelines for meeting next round of developmental requirements to include advanced amphibious capabilities, mobile forward arming and refueling points, and cargo modules. The demonstration was attended by MCSC, MCWL, and Combat Development and Integration representatives to include Deputy to the Commander

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Command PE elicits human decision making associated with concepts and capabilities (the key output of a wargame) while delivering a body of data that can support quantitative analysis. Once promising ideas emerge from wargaming, they are then injected into more detailed and authoritative government M&S applications for mission and engagement-level analyses that emphasize operations-level analysis techniques to identify insights. The final overarching architecture of the next-generation Marine Corps wargaming capability will shape decisions in force structures and maneuvers. The COTS wargame is another tool that can be incorporated into the wargaming capability that will serve a large community of stakeholders

within the Marine Corps and across the Services. The Marine Corps Wargaming and Analysis Center will be supported by an end-to-end architecture which supplies scalable hosting infrastructure and secure network transport to meet these needs. Command PE gives MCWL a near term M&S capability to support wargames in advance of the future Wargaming and Analysis Center software suite that is in the prototyping phases of development.

