



U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND – GROUND VEHICLE SYSTEMS CENTER

Modeling Simulation and Software (MS2) – May 2020

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MODELING, SIMULATION & SOFTWARE (MS2)





Deputy Executive Director Associate Director Division Chief Branch Chief Analytical Methods



M&S is integral to component and vehicle development, informing the requirements generation and acquisition process while providing Army Senior Leaders with critical data for Decision Points



MS2 GROWTH AND VISION





Currently supporting ~2/3 of the equipment in a BCT and 5 Army Modernization Priorities (OMFV, RCV, ERCA, MPF, AMPV) DISTRIBUTION A. See first page.



M&S BARRIERS AND CHALLENGES



Virtual Experimentation (VE)

- Scaling up to support Company-level experiments from 60 players to 120+ players.
- <u>Portable capability</u> to bring VE M&S directly to Soldier sites.
- Develop and experiment within <u>multi-domain operations (MDO)</u>.
- Provide Industry additional opportunities to execute early, full system level vehicle M&S.

Science & Technology (S&T) Combat System SIL's

- Develop a <u>system integration laboratory (SIL)</u> dedicated to S&T exploration by utilizing hardware/software/operator in-the-loop within virtual environments.
- <u>Transition to Open/Modular Architecture using Unreal Engine</u>: Enhance M&S capability for development, test & evaluation, and sustainment.
- <u>1000s run at same time:</u> Running in batch and in parallel on HPC and/or cloud/cluster assets.

Infrastructure

- <u>Facilities</u> to support expansion of the MS2 growth projections.
- <u>Digital Engineering</u> tools to establish an enterprise means of connecting the digital thread throughout the product development lifecycle.

Constructive, Combat Force-on-Force Simulations

- Current M&S tools and processes require a significant amount of time and resources to execute.
- <u>Distributed simulation</u>: Capability to represent systems and weapons for Battlefield Effectiveness cross-CFT in <u>Multi-Domain Operations (MDO)</u> scenarios is needed.

Other Challenge Areas

 Data Science, Data Sharing & Collaboration, Tradespace Analysis, Network & Communication M&S, Survivability M&S



APPROVED FY20 MS2 PLANS



Graphic Environment Enhancements

- Conversion of products to Unreal
- Hardware improvements
- Terrain Database Enhancements
- New content

Strategy and Organizational Structure Support

- Strategy document generation
- Personnel support

Infrastructure

- Facilities to support expansion Including mobile VE capability
- Enterprise level digital engineering tools

Other

- Accommodation models
- Data Analysis Architecture Development
- LRU Emulation to support vehicle SIL's
- Reconfigurable interior buck
- Tradespace database development



FY20+ MS2 PRIORITIES



Complete Organizational Staffing Increase M&S Collaboration across Team Detroit Arsenal Increase non Army (e.g. Marine Corp) customers Continued advancements in UE4 Develop SILs and SW support as required for major Acquisition and S&T efforts Laboratory evolution V&V of M&S Tools

Major Efforts

- Award NGCV Virtual Prototypes with Industry contracts
- CBM+ Predictive Analysis of Failure Modes for vehicle maintenance
- Demonstrate ability to run VE using trailer venue (FY21)
- Execute ADAS program running robotics M&S in the cloud
- First VE in Unreal (late FY21 or early FY22)
- Operational Effectiveness Functional Objectives
- Project Convergence Simulations/Experiments





GVSC Virtual Prototyping (VP) FY21 - 25

- Annual NAMC OTA solicitation that allows DoD and Industry to jointly explore system level approaches and tradespace for the Army's future platforms.
- FY21 VP activities focused on the Optionally Manned Tank (OMT) platform submission date 17 April, anticipate multiple awards in Q2 FY21.

New Technical and Engineering Services (TES) Contract

- Single Indefinite Delivery, Indefinite Quantity contract with a five-year term, an estimated award date of December 2021 and estimated maximum total contract value of \$450 million.
- Provide support to GVSC and its customers in the Program and Project Management (PM) Offices in all phases of their program lifecycles, from material solution analysis to operations and support.
- Provides mechanical, security, software, and systems engineering support in the military ground vehicle systems domain for the acquisition and development of the following: survivability systems, military ground vehicle robotics, software and Post Production Software Support (PPSS), electrical and electronics architectures, high voltage power electronics, and information systems security.

DTIC Modeling and Simulation Contract

- ~150M IAM MAC contract
- Develop system level ground combat models that model man-vehicle interface in a virtual simulated environmental experimentation.

DATC Modeling & Simulation (M&S) Affinity Group

Join DATC for the M&S Affinity Group Kickoff Meeting

- M&S Focused Discussion Between GVSC and DATC Members
- Opportunity for Industry to Engage GVSC M&S SME's

Location: DATC offices Troy, MI

Date: TBD

• Be on the lookout for a data call for technical presentations

Contact Brandon Card for additional details:

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