



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

**Modeling Simulation and Prototyping (MSP)**

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# MODELING SIMULATION AND PROTOTYPING (MSP) ORGANIZATION & CAPABILITIES



## Advanced Concepts



- New Start Ground Vehicle Concepts
- Current Fleet Modernization Concepting
- Current and Developmental Technology Integration
- Industrial Designs
- 3-Dimensional Scale Models

## Analytics



- Survivability and Protection
- Structures
- Fluid, Thermal & Signature
- Vehicle Dynamics
- Vehicle Performance
- Operational and Trade Space Analysis
- Analytical Methods

## Immersive Simulation



- Crew Station Development & Experimentation
- Virtual Experimentation
- Robotic & Autonomy System Simulation
- Immersive Visualizations VR/AR

## DTA Prototype Integration Facility (DTA PIF)

- Model Based Mechanical Engineering
- CNC Forming
- Electrical Engineering
- 3D Scanning
- Project Management
- Cable & Harness Fabrication
- Water/Laser jet Cutting, CNC Milling & Turning
- Packaging & Kitting
- CARC Painting
- Manufacturing Engineering & Process
- Development
- Additive Manufacturing
- TDP's & Tech Manuals
- Welding Capabilities
- Printed Circuit Board Fabrication

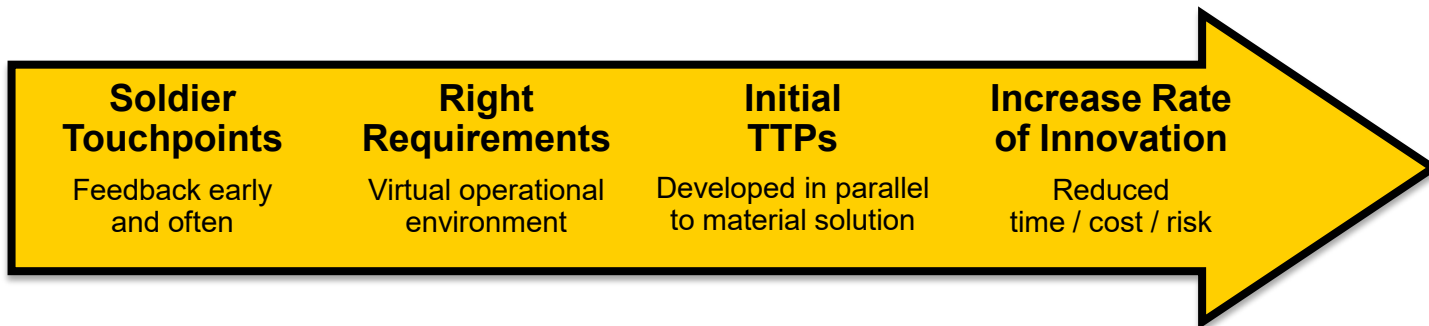
**MSP Organization**

- ~ 330 Associates
- ~ 90% Customer Funded
- Two (2) S&T Funded Programs
  - VP and COAT

## MODELING SIMULATION AND PROTOTYPING (MSP) PURPOSE



- Enable Army to more rapidly simulate next generation ground combat platforms and mission payload performance under real-world operating conditions
- Experiment, refine and explore multiple design approaches faster and more affordably with continuous Soldier feedback
- Quantify next generation platforms, identify technology gaps and capability investment opportunities to support requirements development and ground vehicle decisions

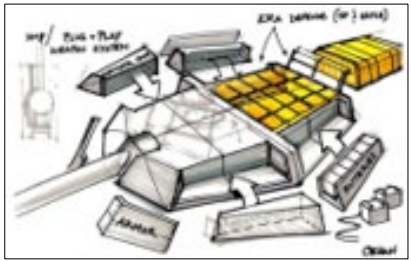


Capabilities are playing a critical role in maintaining readiness, modernizing the current fleet and Army 2040 planning

# VIRTUAL PROTOTYPING (VP) S&T FUNDED PROGRAM



Army Futures and Concepts Center



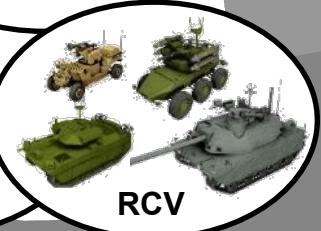
Requirements



NG MBT

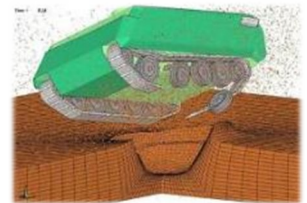
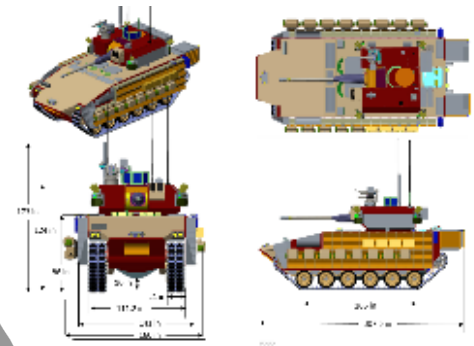


OMFV

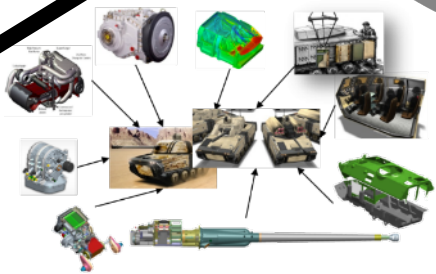


RCV

Virtual Prototypes



Technologies



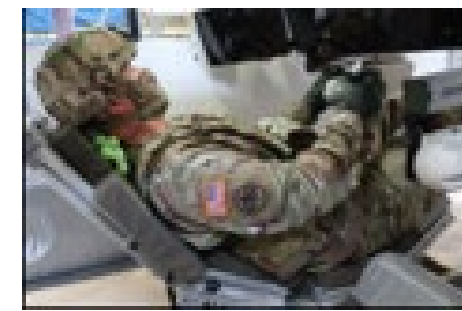
Academia



International



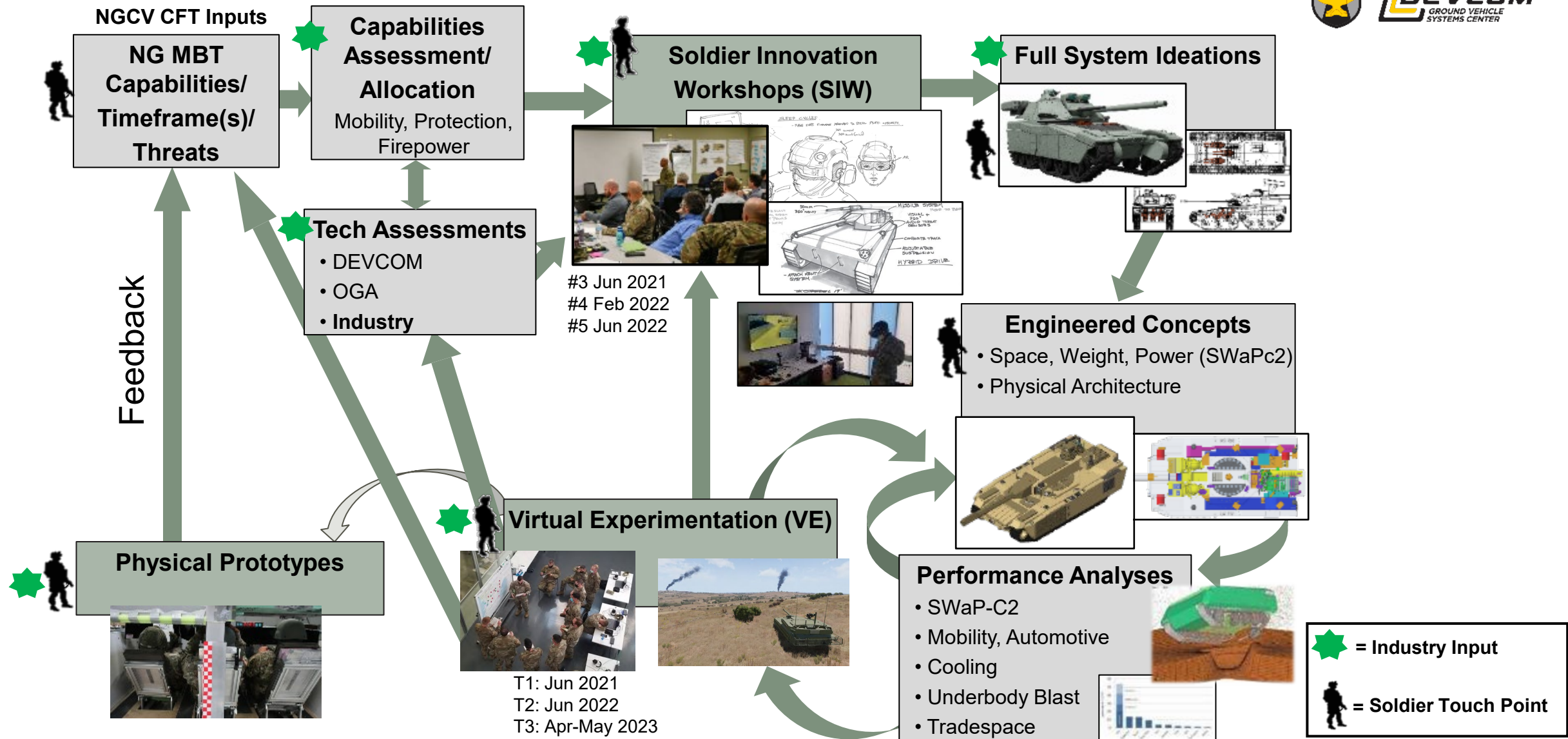
Industry



Support Ground Vehicle Capabilities for Army 2030 and Army 2040 Formation Design



# VIRTUAL PROTOTYPE DEVELOPMENT NEXT GEN TANK EXAMPLE



**~300 Soldiers have virtually employed emerging technologies via first-person simulation to inform ground combat system modernization requirements and TTPs from the Company Level & Below**



# IMMERSIVE SIMULATION – MOTION BASED SIMULATION CAPABILITIES



**Wheeled Vehicle Crew Simulation**

**Closed Hatch Crew Simulation**

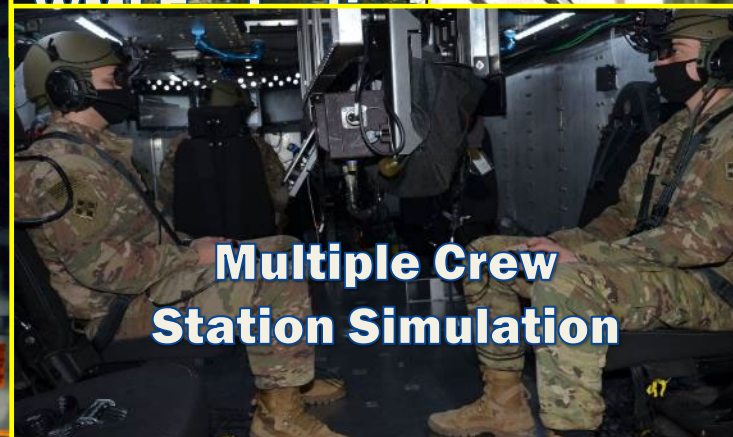
**Impulse Response**

**Turret Systems Simulation**

**Multiple Crew Station Simulation**

**Seat Comfort**

**Single Crew Station Simulation**



Unique physical simulation facilities available for Industry to leverage with Test Service Agreements

Point of Contact  
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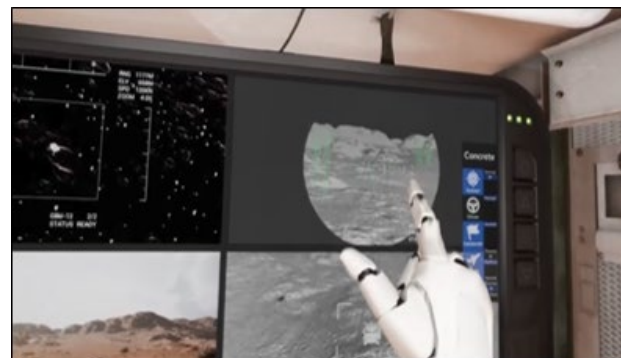


# IMMERSIVE SIMULATION – VISUALIZATION CAPABILITIES



## Products/Capabilities:

- Industrial Design & Modeling of Ground Vehicles
- Creation of Virtual & CGI Environments
- 2D & 3D Photorealistic CGI Renderings
- Terrain Creation & Simulation
- Animations of Ground Vehicle & their Components
- Graphic Design & Customer Experience Design
- AR/VR Virtual Design Review & CAD Overview
- VR Crew Station Simulation
- VR Touchscreen Combat User Interface
- Virtual Augmented Reality Crewstation Simulation
- Virtual Reality Crewstation Simulation
- Interior Crewstation model development
- VR Touchscreen Combat User Interface



## Benefits:

- Provide virtual workspace and facilitation for digital design reviews in order to support decisions for DoD ground systems.
- Support Soldier touch points and other events with form, function, & design feedback in order to inform requirements.
- Inform engineering issues, validating solutions, understand design intent prior to bending metal
- Maintenance procedures; training tools; work instructions



**Interest in visualization capability collaboration and visualization tool benchmarking with Industry**

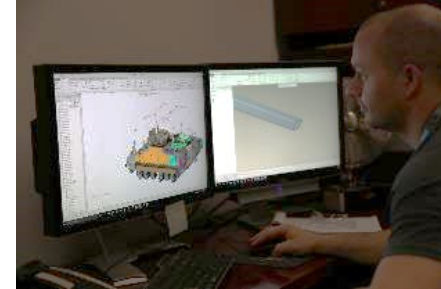
**Point of Contact**  
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 Email: rachel.s.agusti.civ@army.mil

# DTA PIF CAPABILITES



## Products/Capabilities:

- Engineering Design and Integration
- Cable and Harness Fabrication
- Technical Data Package (TDP) and Technical Manual (TM) Development
- 3D Scanning (Vehicle and Component)
- Soldier Technical Training (Welding, Machining, etc)
- CNC Milling and Forming
- Armor Welding and Painting
- 3D Solid Modeling and Finite Element Analysis (FEA)
- Printed Circuit Board Fabrication
- Vehicle Maintenance
- Packaging and Kitting
- Train or Dispatch Technicians to the Field for Support/Repairs



## Benefits:

- Create Govt owned TDPs
- Surge contracts available for large projects
- 20 customizable bays for integration and display
- Partnerships with Depots, Arsenals & DEVCOM Centers
- Classified floorspace available
- Expertise of military platforms and processes
- Provide quick turn-around solutions to meet accelerated timelines
- Delivering full material solutions from concept & design through fabrication & integration
- Partnership through entire project lifecycle with requirement changes incorporated instantaneously



### Points of Contact

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Email: jill.s.logsdon.civ@army.mil

**Prototyping/Integration Collaboration with Industry for technology demonstrators/system prototypes leveraging CRADA Agreements**



# MSP COLLABORATION STRATEGY

## Existing Contracts

- W56HZV-1717-CC-L422 – DCS Corporation – Technical Services for: Immersive Ground Vehicle Simulation development, integration, and execution; Ride Motion Simulation (RMS) and Crew Station/Turret Motion Based Simulation CS/TMBS); Crew Station development and integration. – Immersive Simulation
- W56HZV-20-C-0116 – Torch Technologies – POP thru 12/31/2025 – Software development, experimentation support, and assistance in the development of AR/VR/MR applications and enhancements – Immersive Simulation
- FA087521F0026 – SAIC – Ground Vehicle Rapid Prototype (GVRP) Project (18 months) – Support the implementation Digital Engineering (DE) and SW Engineering across GVSC – Advanced Concepts
- W56HZV-20-C-0118 – Cintel – Intelligent Vehicle Design, Evaluation, and Conceptualization (IVDEC) Framework (15 months) – Link (IVDEC) framework to the Technology Research User Enterprise (TRUE) tool. – Advanced Concepts
- W15QKN-17-9-1025 – Davidson – APS Simulation (POP thru FY26) – Expand the APS simulation tool to Demonstrate active survivability integration and interaction – Analytics
- MACRO\_TDP21- ARA/NEYA - Virtual Simulation Platform for Machine Learning (24 months FY22-24)



dcscorp



SAIC

Cintel



## Collaboration Mechanisms

- Test Services Agreements
- Cooperative Research and Development Agreements (CRADAs)
- GVSC Soldier Accommodation Models: <https://www.usarmygvsc.com/accommodation-models/#>

## Opportunities for Partnership FY24

- W56HZV-22-R-L037\_GVSL\_IS\_Solicitation – **CLOSED** – This effort will provide continued direct technical support services to GVSL, a world-class facility that develops and applies physics-based simulations and simulators in support of TACOM's military vehicle research, development, acquisition and life cycle management missions. – Immersive Simulation

# MSP INVESTMENT STRATEGY – DTA PIF



## Active Contracts

### • W56HZV-21-D-L042 – PIF Contract

- Contractor - ASRC Federal Professional Services
  - Alaskan Native Corporation (ANC) 8(a)
  - Local office Sterling Heights, MI
- Professional and Technical Services & Material
  - Blue /white collared labor
  - Material and services.
  - Engineering, design and program management.
- FFP Material & LOE labor
- \$91 million ceiling awarded \$39.3 million ceiling remaining
- 3 Year POP ending May 2024 with 2-year extension in process adding an additional \$9 million in ceiling.



### • W55HZV-2-D – PIF Contract

- (4) Contractors – 313 Industries, Mettle Craft Manufacturing, Milton Manufacturing & Rose-A-Lee - All Women owned.
- Build-to-Print (B2P) components.
- 5-year POP ending Feb 2025.
- Multiple Award IDIQ.
- \$19 Million ceiling awarded \$15 million remaining



### • W56HZV-23-D-0017 TES – GVSC Contract

- Contractor DCS Corporation
- Level of Effort (LOE) Technical and Engineering Services



### • Credit Card – GPC & Convenience Check

- Fabrications support and material
- Micro Purchase Limit \$10K
- GSA Contract \$25K
- Convenience Check Micro Purchase Limit \$5K

#### Points of Contact

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## SUMMARY

- **MSP looking for additional Industry technologies to leverage into system level M&S**
- **MSP will solicit for system level Industry VPs as funding becomes available**
- **MSP looking to leverage Industry for complementary/supplementary M&S capabilities as well as offer GVSC internal M&S capabilities to Industry**
- **MSP can assist Industry in the integration of their technology onto a developmental system demonstrator/prototypes**
- **MSP will continue to leverage industry partners as a surge mechanism that complements and supplements DTA PIF capabilities**

**MSP looks forward to continuing and expanding Industry partnerships and opportunities**



# Questions?

**Join the MSP and DTA PIF Teams for  
One-on-One Conversations at  
Table #2 Classroom 143**