



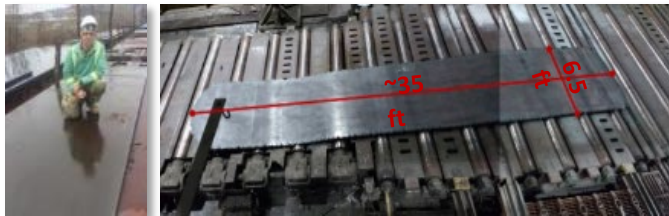
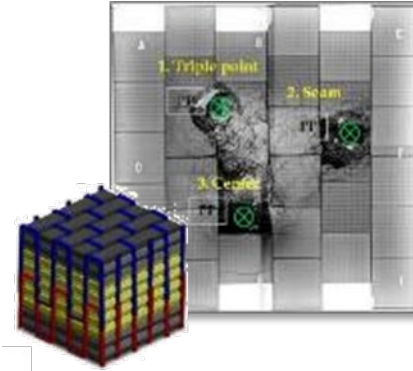
# Application & Integration

## OVERVIEW

Ground vehicle system weights have risen in weight response to new and increasing threats and increasing protection areas. The Application and Integration Team investigates and matures material technologies; provides weight reduction and design optimization engineering support for integration into DoD ground vehicle systems and support systems.

## COMPETENCIES

**Material Maturation** - Transitioning lightweight materials to ground vehicle systems



**Weight Reduction & Design Optimization** - Design optimization for weight reduction using commercially-available design tools

## COLLABORATION PARTNERS



## CUSTOMER SUPPORTED



## LIGHTWEIGHT COMBAT VEHICLE S&T CAMPAIGN (LCVSTC)

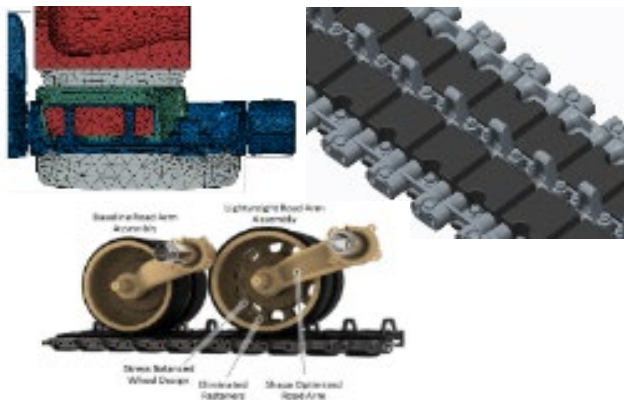
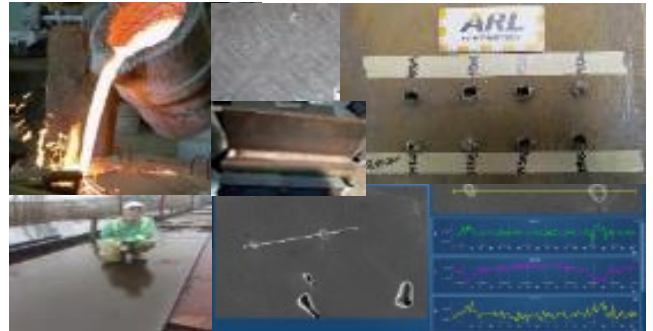
GVSC investigated and identified a set of processes, tools, technologies and materials for vehicle light-weighting and developed a plan called the LCVSTC. The holistic light-weighting approach recommended is an integral part of future ground vehicle concepts and optimization studies, directs future force vehicle studies and concept vehicle iterations, and helps determine what variables will enable the Army to become more expeditionary.

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## CURRENT MAJOR PROJECTS

### FeMnAl Alloy Maturation

- High-Mn, high-Al steel alloy with 10-15% lower density than current armor
- Ideal drop-in replacement for current armor steels with significant weight savings possible
- Challenges: manufacturability, machinability, weldability, blast and ballistic performance, modeling and simulation, coatings and corrosion performance



### Advanced Lightweight Running Gear Design Optimization

- Cost informed prototype lightweight road wheel/suspension components for a combat vehicles
- Prototypes developed will be tested to prove durability and develop component fatigue models and evaluated on a vehicle
- Final recommendations will be made for which cost effective lightweight approaches have the best potential for a successful transition to production in the future

### Loads Design Optimization

- Acquire design loads for ground combat vehicles
- Develop design guides and a generic vehicle design model for design optimization
- Lightweight/optimization of Army ground vehicle systems/components and parts
- Ability to effectively use virtual optimization tools
- Know and control design safety factors.



## FOR FURTHER INFORMATION:

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